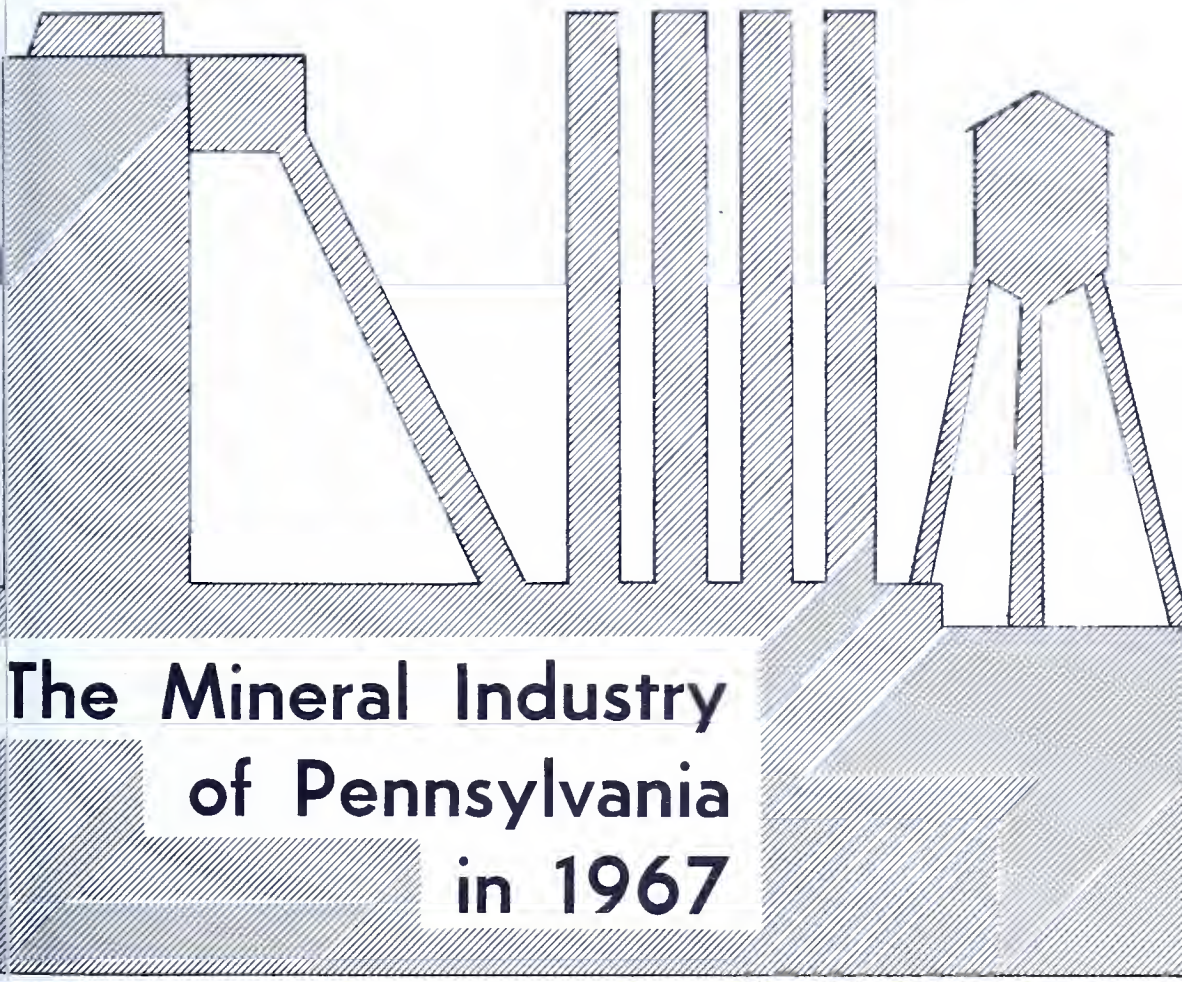
Information Circular 63

1969



The Mineral Industry of Pennsylvania in 1967

CHARLES C. YELOUSHAN

COMMONWEALTH OF PENNSYLVANIA
STATE PLANNING BOARD
Irving R. Hand, Executive Director

BUREAU OF
TOPOGRAPHIC AND GEOLOGIC SURVEY
Arthur A. Socolow, State Geologist

PENNSYLVANIA STATE LIBRARY

Digitized by the Internet Archive
in 2016 with funding from
This project is made possible by a grant from the Institute of Museum and Library Services as administered by the Pennsylvania Department of Education through the Office of Commonwealth Libraries

https://archive.org/details/mineralindustryc00yelc_2

INFORMATION CIRCULAR 63

The Mineral Industry of Pennsylvania in 1967

By Charles C. Yeloushan
U. S. Bureau of Mines

Prepared by the U. S. Bureau of Mines
in cooperation with the
Pennsylvania Geological Survey

PENNSYLVANIA GEOLOGICAL SURVEY
FOURTH SERIES
HARRISBURG

1969

Copies of this publication may be obtained free by writing
to the Pennsylvania Geological Survey, Harrisburg, Pa. 17120

The Mineral Industry of Pennsylvania

his booklet has been prepared under a cooperative agreement between the Bureau of ines, U.S. Department of the Interior, and the Pennsylvania Bureau of Topographic id Geologic Survey for collecting information on all minerals except fuels.

By Charles C. Yeloushan [1]

Production reported by the mineral industry of Pennsylvania in 1967 was valued : $898.4 million, a $5 million decrease om that of 1966. Value of anthracite and bituminous coal fell $4.5 million and $5.8 million, respectively, from 1966 levels al-

[1] Mining engineer, Bureau of Mines, Pittsburgh, Pa.

Table 1.—Mineral production in Pennsylvania

Mineral	1966		1967	
	Quantity	Value (thousands)	Quantity	Value (thousands)
ement:				
Portland----376-pound barrels--	40,003,833	$114,357	40,196,388	$114,592
Masonry----280-pound barrels--	2,960,110	7,860	2,928,554	7,948
ays [2]----short tons--	3,293,114	17,033	2,994,091	16,703
oal:				
Anthracite----do----	12,941,264	100,663	12,256,063	96,160
Bituminous----do----	81,442,801	425,168	79,411,968	419,345
opper----do----	3,178	2,299	4,401	3,365
em stones----	NA	4	NA	4
me----short tons--	1,585,088	22,816	1,719,089	24,715
atural gas----million cubic feet--	90,914	25,820	89,966	25,280
atural gas liquids:				
Natural gasoline and cycle products thousand gallons--	3,211	186	1,167	77
LP gases----do----	1,863	121	1,757	114
eat----short tons--	52,912	562	39,505	437
etroleum (crude) thousand 42-gallon barrels--	4,337	19,300	4,387	19,701
nd and gravel----short tons--	17,567,000	29,562	17,479,000	29,614
one----do----	59,087,000	99,233	60,155,000	103,157
nc [3] (recoverable content of ores, etc.) short tons--	28,080	8,143	35,067	9,468
alue of items that cannot be disclosed: Clays, (kaolin), cobalt, gold, iron ore, mica, pyrites, sericite-schist, silver, and tripoli----	XX	30,281	XX	27,718
Total----	XX	903,408	XX	898,398
Total 1957–59 constant dollars----	XX	931,980	XX	[p]899,195

[p] Preliminary. NA Not available. XX Not applicable.
[1] Production as measured by mine shipments, sales, or marketable production (including consumption by oducers).
[2] Excludes kaolin; included with "Value of items that cannot be disclosed."
[3] Recoverable zinc valued at the yearly price of prime western slab zinc, East St. Louis market. Represents alue established after transportation, smelting, and manufacturing charges have been added to the value ore at the mine.

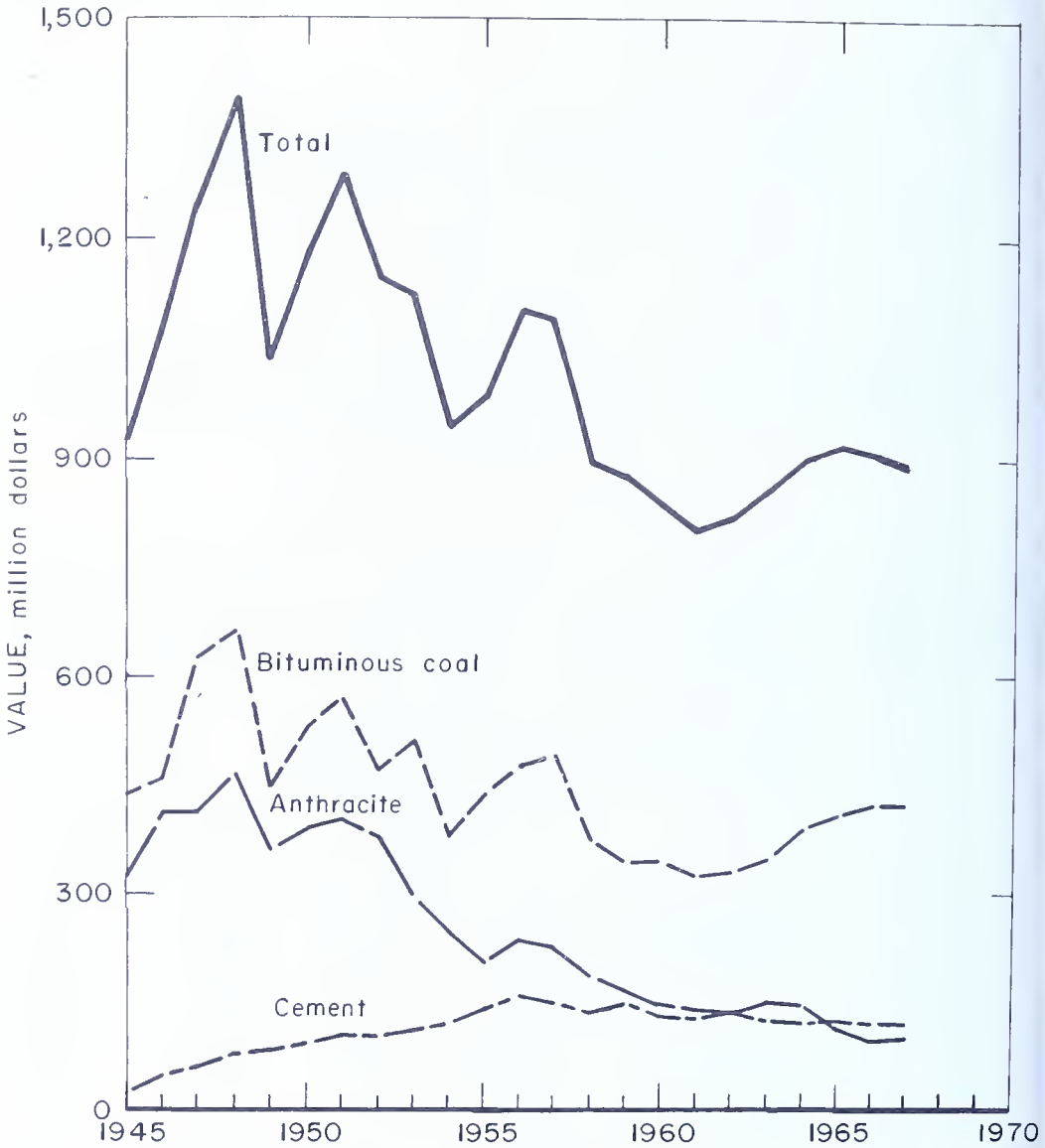


Figure 1.—Value of bituminous coal, anthracite, cement, and total value of mineral production in Pennsylvania.

Table 2.—Value of mineral production in Pennsylvania by counties [1]

County	1966	1967	Minerals produced in 1967 in order of value [2]
Adams	W	W	Stone, lime, sericite schist, clays.
Allegheny [3]	$32,983,953	$27,585,061	Coal, cement, clays, sand and gravel, stone, iron ore (pigment material).
Armstrong	25,138,199	28,875,472	Coal, sand and gravel, clays, stone, lime.
Beaver	3,639,419	2,435,184	Clays, coal, sand and gravel.
Bedford	W	W	Stone, coal, lime, sand and gravel.
Berks	W	W	Iron ore, cement, stone, clays, cobalt, coal, sand and gravel, pyrites.
Blair	W	W	Stone, clays, coal.
Bradford	664,920	W	Sand and gravel.
Bucks	W	W	Sand and gravel, stone, clays.
Butler [4]	12,480,210	10,882,969	Coal, cement, stone, lime, sand and gravel.
Cambria	W	W	Coal, clays, stone, iron ore (pigment material).
Carbon	4,885,309	5,682,802	Coal, sand and gravel, stone.

See footnotes at end of table.

Table 2.—Value of mineral production in Pennsylvania by counties [1]—Continued

County	1966	1967	Minerals produced in 1967 in order of value [2]
Centre	$16,396,017	$18,825,018	Lime, stone, coal, sand and gravel, clays.
Chester [5]	5,036,388	4,007,661	Stone, lime, clays.
Clarion	13,745,918	12,878,323	Coal, stone, sand and gravel, clays.
Clearfield	29,232,088	29,630,420	Coal, clays.
Clinton	2,942,513	4,064,316	Coal, stone, clays.
Columbia	3,850,214	4,008,596	Coal, sand and gravel, lime, stone.
Crawford	429,000	395,000	Sand and gravel.
Cumberland	W	W	Stone, sand and gravel, clays.
Dauphin	3,611,118	3,099,161	Stone, coal, clays, sand and gravel.
Delaware	W	W	Stone.
Elk	W	W	Coal, stone.
Erie	W	W	Sand and gravel, peat.
Fayette	8,993,792	7,083,462	Coal, stone, clays.
Forest	310,000	W	Sand and gravel.
Franklin	1,636,365	1,606,688	Stone, sand and gravel.
Fulton	W	W	Do.
Greene	W	W	Coal, clays.
Huntingdon	W	W	Sand and gravel, stone, coal, clays.
Indiana	W	W	Coal, clays.
Jefferson	W	W	Coal, clays, stone, sand and gravel.
Lackawanna	W	W	Coal, sand and gravel, peat.
Lancaster	8,245,104	8,023,487	Stone, coal, clays, sand and gravel.
Lawrence	W	W	Cement, stone, coal, clays, sand and gravel, peat.
Lebanon	21,571,924	22,016,797	Iron ore, copper, lime, stone, cobalt, pyrites, gold, silver.
Lehigh	29,017,306	30,183,003	Cement, zinc, stone.
Luzerne	40,677,402	38,990,146	Coal, stone, sand and gravel, peat, clays.
Lycoming	W	W	Stone, sand and gravel, coal, tripoli.
McKean	407,675	302,186	Clays, stone, sand and gravel.
Mercer	2,476,343	1,929,694	Coal, sand and gravel, stone.
Mifflin	W	W	Sand and gravel, stone, lime.
Monroe	771,072	696,602	Stone, sand and gravel, clays.
Montgomery	W	W	Stone, cement, lime, clays.
Montour	W	W	Stone.
Northampton	57,326,162	59,169,193	Cement, stone, sand and gravel.
Northumberland	W	W	Coal, clays, stone, lime.
Perry	W	W	Stone.
Philadelphia	W	W	Sand and gravel.
Potter	W	124,861	Stone.
Schuylkill	37,123,723	36,016,832	Coal, stone, sand and gravel, clays.
Snyder	477,304	431,156	Stone, sand and gravel, coal.
Somerset	19,403,385	18,208,936	Coal, stone, clays, sand and gravel.
Sullivan	114,975	184,092	Coal.
Susquehanna	492,787	W	Stone, coal.
Tioga	2,504,665	3,113,296	Coal, sand and gravel.
Union	W	W	Stone.
Venanago	2,359,860	W	Coal, sand and gravel.
Warren	644,000	930,000	Sand and gravel.
Washington	W	W	Coal, stone, clays.
Wayne	W	W	Sand and gravel, stone, peat.
Westmoreland	W	W	Coal, stone, sand and gravel, lime.
Wyoming	720,319	W	Sand and gravel, stone.
York [4]	8,924,263	9,471,890	Cement, stone, lime, clays, sand and gravel, mica.
Undistributed [6]	r 504,174,000	507,546,640	
Total	903,408,000	[7] 898,398,000	

r Revised.
W Withheld to avoid disclosing individual company confidential data; included with "Undistributed."
[1] Cameron, Juniata, and Pike Counties are not listed because no production was reported.
[2] Excludes value of natural gas, natural gasoline, LP gases, petroleum, and gem stones unspecified by counties; included with "Undistributed."
[3] Excludes cement; included with "Undistributed."
[4] Excludes cement and lime; included with "Undistributed."
[5] Excludes lime; included with "Undistributed."
[6] Includes values indicated by symbol W.
[7] Data do not add to total due to rounding.

though collectively they accounted for 57 percent of the total State mineral value in 1967. Stone production continued to rise with a value increase of $3.9 million above that of 1966. Copper showed a substantial increase in both quantity and value. Cement, crude petroleum, sand and gravel, lime, kaolin clay, gold, pyrites, and silver also showed total value increases above those of 1966. Production of zinc increased considerably but the unit value fell slightly. Output of clays, natural gas, natural gas liquids, peat, cobalt, iron ore, mica, sericite-schist, and tripoli decreased from that of 1966.

Table 3.—Indicators of Pennsylvania business activity

	1966	1967 p	Change (percent)
Personal income:			
Total—millions	$34,434	$36,624	+6.4
Per capita	$2,968	$3,149	+6.1
Construction activity:			
Construction contracts [1]	$2,239,440	$2,897,123	+29.4
Nonresidential buildings	$1,040,280	$1,128,902	+8.5
Residential buildings	$663,166	$680,836	+2.7
Nonbuilding construction	$535,994	$1,087,385	+102.9
Cement shipments into and within Pennsylvania—thousand 376-pound barrels	16,781	17,527	+4.4
Mineral production—millions	$903	$898	−.6
Civilian work force—thousands	4,788.6	4,824.7	+.8
Total civilian employment—do	4,625.4	4,659.3	+.7
Unemployment (percent of work force)	3.4	3.4	-------
Manufacturing employment—thousands	1,555.8	1,540.6	−1.0
Durable goods—do	925	918.1	−.7
Nondurable goods—do	630.8	622.5	−1.3
Nonmanufacturing employment—thousands	2,513.5	2,582.6	+2.7
Mining—do	42.4	42.1	−.7

p Preliminary.
[1] F. W. Dodge Division, McGraw-Hill Information Systems Company.
Sources: U.S. Department of Labor; Pennsylvania Department of Employment Security; U.S. Department of Commerce.

Table 4.—Employment and injury experience in the mineral industries

Year and industry	Average men working daily	Days active	Man-days worked (thousands)	Man-hours worked (thousands)	Number of injuries: Fatal	Number of injuries: Nonfatal	Injury rates per million man-hours: Frequency	Injury rates per million man-hours: Severity
1966:								
Bituminous coal	23,433	231	5,415	43,469	28	1,001	23.67	5,296
Anthracite	9,292	203	1,883	13,672	6	829	61.07	4,477
Metal	1,579	287	454	3,629	----	30	8.27	815
Nonmetal	1,731	252	436	3,545	----	140	39.50	769
Sand and gravel	1,205	232	280	2,384	1	50	21.39	3,766
Stone	8,286	269	2,226	18,285	7	315	17.61	3,356
Peat	60	225	14	109	----	-------	-------	-------
Total [1]	45,586	235	10,706	85,092	42	2,365	28.29	4,318
1967: p								
Bituminous coal	22,800	234	5,329	42,820	27	925	22.23	5,123
Anthracite	7,750	219	1,701	12,359	9	609	50.00	5,511
Metal	1,600	280	448	3,586	2	31	9.20	3,663
Nonmetal	1,430	250	357	2,920	----	89	30.48	740
Sand and gravel	1,195	240	287	2,409	1	55	23.25	3,731
Stone	8,335	267	2,225	18,261	9	281	15.88	3,447
Peat	46	224	10	84	----	4	47.87	3,770
Total [1]	43,155	240	10,357	82,439	48	1,994	24.77	4,549

p Preliminary.
[1] Data may not add to totals shown because of independent rounding.

REVIEW BY MINERAL COMMODITIES

FUELS

Coal (Anthracite).—Anthracite production declined for the fifth consecutive year to a low of 12.3 million tons, a 700,000-ton decrease from that of 1966. The average value of anthracite was $7.85 per ton, an increase of $0.07 over that of 1966. Of the total production, 6.6 million tons was shipped by truck, 5.5 million tons was shipped by rail, and 143,000 was used as colliery fuel. Underground mining produced 3.3 million tons of which 2 million tons was mechanically loaded by 228 conveyors and pit-car loaders (including duck-bills and other self-loading conveyors), 119 scraper loaders, and 21 mobile

Table 5.—Coal (bituminous) production, by counties

County	Number of mines				Production, thousand tons	Average price per ton
	Underground	Strip	Auger	Total		
Allegheny	12	15	1	28	5,028	$5.28
Armstrong	31	45	11	87	5,899	4.24
Blair	1	1	------	2	5	5.51
Butler	8	32	5	45	2,023	3.82
Cambria	57	22	6	85	7,718	5.98
Centre	3	12	2	17	786	3.93
Clarion	1	60	------	61	2,828	3.91
Clearfield	25	57	9	91	6,910	3.73
Clinton	----	12	------	12	929	3.77
Elk	4	9	4	17	320	3.90
Fayette	7	24	------	31	527	5.42
Greene	19	3	------	22	11,898	6.89
Huntingdon	2	2	1	5	44	2.69
Indiana	45	30	7	82	7,669	4.50
Jefferson	18	41	12	71	1,771	4.01
Lawrence	----	19	------	19	925	3.38
Lycoming	----	5	------	5	113	3.26
Mercer	----	6	------	6	305	3.73
Somerset	41	60	2	103	1,061	4.16
Tioga	----	7	------	7	715	4.28
Venango	----	13	------	13	517	3.26
Washington	16	15	1	32	14,776	6.55
Westmoreland	16	22	1	39	3,333	5.53
Other counties [1]	6	5	------	11	313	3.69
Total	312	517	62	891	[2] 79,412	5.28

[1] Includes data for Beaver and Bedford Counties.
[2] Data do not add to total shown because of independent rounding.

loaders. Strip pits (the largest segment of the industry) supplied 4.7 million tons, culm banks 3.6 million tons, and river dredging 631,600 tons. Production of fresh-mined coal (underground and strip mines) continued to decrease, a 1.3-million-ton loss from that of 1966.

Daily employment in the anthracite industry averaged 7,750 men (1,542 less than in 1966). Productivity from all operations except dredges averaged 6.9 tons per man-day, while dredge operations reported 34.2 tons per man-day for an overall average of 7.21 tons per man-day (0.3 ton better than in 1966).

Luzerne County continued to be the leading producer with 4.3 million tons, followed by Schuylkill County with 4.2 million tons, and Northumberland with 1.5 million tons.

Retail dealer deliveries for the year increased by 200,000 tons while industrial consumption by electric utilities and coke plants remained virtually unchanged.

Nine deaths were reported in the anthracite industry for a frequency rate of 0.74 per million man-hours exposure, an increase of three deaths from 1966. Three of the fatalities occurred at a mine employing fewer than 15 persons underground, five at mines employing 15 or more persons underground, and one at a strip mine. There were 609 nonfatal lost-time injuries, a frequency rate of 50.00 per million man-hours.

Coal (Bituminous).—Bituminous coal production totaled 79.4 million tons at an average of $5.28 per ton. The 48.7 million tons sold in the open market averaged $4.30 per ton, and the 30.7 million tons not sold in the open market averaged $6.84 per ton. Of the total output, 62 million tons was shipped by rail or water, 15.1 million tons by truck, and 2.3 million tons by other means.

There were 891 mines, including 312 underground mines producing 56.5 million tons, 517 strip mines producing 22.0 million tons, and 62 auger mines producing 938,000 tons.

Pennsylvania is divided into two bituminous coal-producing districts. District 1 consists of Bedford, Blair, Bradford, Cambria, Cameron, Centre, Clarion, Clearfield, Clinton, Elk, Forest, Fulton, Huntington, Jefferson, Lycoming, McKean, Mifflin, Potter, Somerset, and Tioga Counties; that part of Armstrong County including mines served by the P. & S. R.R. on the west bank of the Allegheny River, and north of the Conemaugh di-

vision of the Pennsylvania Railroad; that part of Fayette County, including all mines on and east of the line of Indian Creek Valley branch of the Baltimore & Ohio Railroad: that part of Indiana County north of, but excluding the Saltsburg branch of, the Pennsylvania Railroad between, Edri and Blairsville, both exclusive; and that part of Westmoreland County including all mines served by the Pennsylvania Railroad, Torrance, and east. District 2 consists of Allegheny, Beaver, Butler, Greene, Lawrence, Mercer, Venango, and Washington Counties; that part of Armstrong County west of the Allegheny River and exclusive of mines served by the P. & S. R.R.; that part of Indiana County including all mines served on the Saltsburg branch of the Pennsylvania Railroad north of Conemaugh River; Fayette County, except all mines on and east of the line of Indian Creek Valley branch of the Baltimore & Ohio Railroad; and that part of Westmoreland County, including all mines except those served by the Pennsylvania Railroad from Torrance, east. District 1 had 226 underground mines and accounted for 21 million tons, of which 18 million tons was sold in the open market for $4.65 per ton; 220 cutting machines cut 2.9 million tons; 150 mines loaded 20.6 million tons mechanically with 241 continuous miners, 71 mobile loaders (15 of which were used with continuous miners), and 65 hand-loaded face conveyors. District 2 had 86 underground mines accounting for 35.5 million tons of which 8.1 million tons was sold in the open market for $5.05 per ton; 106 machines cut 6.9 million tons and 63 mines loaded 35.5 million tons mechanically with 208 continuous miners, 166 mobile loaders (85 of which were used with continuous miners), and five hand-loaded face conveyors.

Strip mines in district 1 totaled 347 and accounted for 16.4 million tons, almost all of which was sold in the open market for $3.77 per ton. Stripping was accomplished by 449 shovels, 238 draglines (10 of which had over 12 cubic yards of capacity), seven carryall scrapers (two of which had over 12 cubic yards of capacity), 455 bulldozers, 138 drills and 864 trucks. The 170 strip mines in district 2 recovered 5.6 million tons of coal with 178 shovels (two of which had the capacity of over 12 cubic yards), 104 draglines (three of which had over 12 cubic yards of capacity), eight carryall scrapers (four of which had over 12 cubic yards of capacity), 221 bulldozers, 68 power drills, and 365 trucks.

The 50 auger mines in district 1 produced 712,000 tons at an average of $4.17 per ton with 51 augers, seven bulldozers, 10 power drills, and 64 trucks. A total of 12 auger mines in district 2 produced 226,000 tons at $3.79 per ton with 11 augers, two bulldozers, four power drills, and 11 trucks.

Ninety-one preparation plants mechanically cleaned 51.7 million tons of coal, of which 44.6 million tons came from underground mines, 6.9 million tons from strip mines, and 194,000 tons from auger mines; 32.7 million tons was cleaned by wet-washing other than jigs, 10.4 million tons by jigs, and 8.6 million tons by pneumatic methods. Coal was crushed at 189 plants for a total of 38.4 million tons with 63 plants treating 12.4 million tons with calcium chloride, oil, or other materials. Thermal drying was conducted at 13 plants with a total of 18 thermal units drying 6.5 million tons.

During the year 27 fatal and 925 nonfatal lost-time injuries occurred. Of the fatalities, 20 occurred underground (nine from falls of roof, four on haulage, three on machinery, one on electricity, and three from falls of face, side, rib, or pillar) three on the surface (two haulage and one on machinery), and four on strip mines. Injury rates were 0.63 fatal and 21.60 nonfatal per million man-hours exposure and 0.34 fatal and 11.65 nonfatal per million short tons.

Trophy winner in the 1967 Pennsylvania National Safety Competition in the Underground Coal Group was Robena No. 3 mine, United States Steel Corp., for operating 703,906 man-hours without a disabling work injury. Newfield mine, Republic Steel Corp., also received a Certificate of Achievement for its outstanding safety record in the Underground Coal Group in 1967 with 365,861 man-hours worked without a disabling work injury.

Coke and Coal Chemicals.—Oven-coke production totaled 18.4 million tons, a 2-percent decrease from that of 1966. Beehive-coke production totaled 346,000 tons, a 43-percent decrease from that of 1966. Oven-coke had an average value

of $16.05 per ton at the ovens ($0.25 per ton more than in 1966); beehive coke average $14.21 per ton at the ovens ($0.70 per ton more than in 1966). Twelve oven-coke plants carbonized 26.2 million tons of coal and had 70.22 percent yield of coke from coal. Eight beehive-coke plants (one more than in 1966), carbonized 574,000 tons of coal and had 60.19 percent coke yield.

Of the total oven-coke output, producing companies used 16.7 million tons in blast furnaces and 22,000 tons for other purposes and sold 732,000 tons to blast-furnace plants, foundries, other industrial plants, and to retail dealers for residential heating both in and out of the State. Of the total beehive-coke production, 278,000 tons was sold to blast furnaces, 16,000 tons to foundries, and 52,000 tons to other industrial plants. Of the 14.5 million tons of oven and beehive coke distributed in Pennsylvania, 14.1 million tons went to blast-furnace plants, 239,000 tons to foundries, 175,000 tons to other industrial plants, and less than 500 tons for residential heating.

Breeze recovered at coke plants totaled 773,000 tons at an average of $6.46 per ton. Coke breeze yield per tons of coal was 2.94 percent. Of the breeze used by producers 549,000 tons was used in agglomerating plants, 81,000 tons in steam plants, and 94,000 tons for other industrial uses. Breeze sold on the open market totaled 120,000 tons at an average of $7.33 per ton. Stocks of breeze on hand at yearend totaled 210,000 tons.

Coal chemicals produced at the oven-coke plants included 243,000 tons of ammonium sulfate equivalent, 234.3 million gallons of tar, and 76.8 million gallons of crude light-oil, from which were derived 42.5 million gallons of benzene, 10.3 million gallons of toluene, 3.3 million gallons of xylene, and 1.7 million gallons of solvent naphtha.

Natural Gas Liquids.—Production of natural gas liquids totaled 2.9 million gallons of which 1.2 million gallons was natural gasoline and cycle products and 1.7 million gallons was liquefied petroleum (LP) gases and ethane. Natural gasoline and cycle products were listed at 6.6 cents per gallon (5.8 cents in 1966) and LP gases and ethane at 6.5 cents per gallon (same as in 1966). Natural gas processing plants were located in Elk, Venango, Warren, and Greene Counties. Estimated proved recoverable reserves of natural gas liquids totaled 1.2 million (42-gallon) barrels at yearend.

Underground-storage capacity for LP gas was 1.1 million barrels located in four mined granite caverns in Delaware County and a mined shale cavern in Westmoreland County. An inground frozen earth cavity is being constructed in Philadelphia County by Philadelphia Gas Works (completion 1970) with a capacity of 1.2 million barrels.

Peat.—Production of peat totaled 41,560 tons from eight operations located in five counties. Sales totaled 39,500 tons at an average price of $11.06 per ton. Of the total sold, 71 percent was reported as humus; 86 percent was sold in bulk for $11.03 per ton, and 14 percent packaged for $11.25 per ton. Peat producers reported working on deposits totaling 348 acres (average depth of 29 feet) with 2 million tons of reserves. Luzerne County was the leading producer; other counties producing peat were Erie, Lackawanna, Lawrence, and Wayne.

Petroleum and Natural Gas.—Crude oil production totaled 4.4 million 42-gallon barrels, a 1-percent increase over that of 1966. The average price per barrel increased $0.04 to $4.49. The number of producing oil and condensate wells decreased from 48,000 in 1966 to 42,000 in 1967. Estimated proved recoverable reserves of crude oil at yearend totaled 63.3 million barrels, a decrease of 9.1 million barrels from that of yearend 1966. Operating capacity of 13 crude oil refineries totaled 620,500 barrels per calendar day.

Natural gas production totaled 90 billion cubic feet, (Bcf), a 1-percent decrease from that of 1966. Average wellhead value was 28.1 cents per 1,000 cubic feet. Productive gas wells decreased from 17,800 in 1966 to 17,300 in 1967. Estimated proved recoverable reserves of natural gas including underground storage at yearend totaled 1,392 Bcf, an increase of 41 Bcf from that of yearend 1966. Natural gas held in underground reservoirs for storage purposes at yearend 1967 totaled 490 Bcf, a decrease of 11 Bcf. Total natural gas underground reservoir capacity at yearend totaled 696 Bcf.

According to the Oil and Gas Section, Pennsylvania Bureau of Topographic and Geologic Survey, 685 wells were drilled, including 274 oil wells, 271 gas wells, 79 dry holes, 57 service wells, three stratigraph tests, and one miscellaneous test. In addition, 22 wells were deepened, including 21 gas wells and one dry hole. The total footage of all wells drilled was 1,508,211 of which 1,245,324 was development footage, 164,451 was exploratory footage, and 98,436 feet were service-well, stratigraphic, and miscellanous drilling. Of the 624 deep and shallow well completions, 59 wells were exploratory (36 percent successful) and 565 were development (93 percent successful). Total deep footage drilled at 71 deep wells (Middle Devonian or older) was 350,693. Of the 71 deep wells, 61 were gas wells and 10 were dry holes. A total of 41.4 billion cubic feet of natural gas was produced from deep reservoirs. Shallow drilling (Upper Devonian or younger (totaled 614 wells, of which 274 were oil wells, 210 gas wells, 57 service wells, three stratigraphic tests, and 70 dry holes. Of the 274 oil wells, 65 were drilled in areas being waterflooded. Total shallow footage amounted to 1,157,518.

Warren County continued to be the most active oil area with 163 new wells drilled, of which 147 were successful oil wells, producing primarily from the Glade and Clarendon Sandstones and 16 were dry holes. Indiana County continued to be the most active gas area with 131 wells drilled, of which 43 wells were drilled in the Marchand field, and all but one well was successful. The Big Run field in Jefferson, Indiana, and Clearfield Counties had 37 new wells, of which 34 were gas wells and three were dry holes. Seismic crews logged 17 crew-weeks during the year compared with 68 crew-weeks in 1966. The steamflood project which has been active in the Venango "first sand" in the Franklin-Oak Forest field in Venango County during the last 3 years has recently been converted to a waterflood.

NONMETALS

Cement.—Shipments of portland cement were slightly above those of 1966 but the average price per 376-pound barrel decreased $0.01 to $2.85. Shipments of masonry cement decreased 1 percent from those of 1966 while the average price pe 280-pound barrel increased $0.05 to $2.7 Portland cement was produced at 22 plan during 1967 which had a total annu production capacity of 50.9 million barrel a decrease of 4.9 million barrels from th of 1966. Masonry cement was produced a 21 plants during 1967, five more plan than in 1966.

The dividing line between eastern an western Pennsylvania is along the easter boundaries of Potter, Clinton, Centre Huntingdon, and Franklin Counties. Por land cement shipments of all types fror the five plants in western Pennsylvani totaled 10.6 million barrels at an averag price of $3.10 per barrel, of which 91 per cent was types I–II (general use an moderate heat), 3 percent was type II (high-early-strength), and 2 percent wa portland-pozzolan; 52 percent was shippe to locations in western Pennsylvania, 3 percent to Ohio, and 6 percent to Wes Virginia. Of the total shipments fron western Pennsylvania, 9.3 million barrel was shipped by truck in bulk, 743,000 bar rels by truck in containers, 495,000 barrel by railroad in bulk, and 83,000 barrels by railroad in containers.

Portland cement shipments of all type from 17 plants in eastern Pennsylvania totaled 29.6 million barrels at an average price of $2.76 per barrel, of which 9 percent was types I–II, 6 percent type III and 3 percent white cement; 34 percent was shipped to locations in eastern Pennsylvania, 28 percent to New Jersey, 14 percent to New York, 6 percent to Connecticut, and 6 percent to Maryland. Of the total shipments from eastern Pennsylvania, 15.6 million barrels was by truck in bulk, 9.4 million barrels by railroad in bulk, 3.4 million barrels by truck in containers, and 1.2 million barrels by railroad in containers.

Of the 10.5 million barrels of portland cement produced in western Pennsylvania, 4.9 million barrels was air-entrained; of 29.0 million barrels produced in eastern Pennsylvania, 5.6 million barrels was air-entrained. Portland cement stocks at year-end totaled 1.7 million barrels in western Pennsylvania and 2.9 million barrels in eastern Pennsylvania.

Ready-mixed concrete companies purchased 16.9 million barrels of portland cement shipped from eastern Pennsylvania and 6.4 million barrels from western

Pennsylvania; concrete product manufacturers purchased 6.6 million barrels from the east and 1.4 million barrels from the west, building material dealers purchased 3.1 million barrels from the east and 850,000 barrels from the west, and highway contractors purchased 2.2 million barrels from the east and 1.4 million barrels from the west.

Limestone and cement rock were the chief raw materials used for the manufacture of portland cement, 8.3 million tons in eastern Pennsylvania and 5.7 million tons in western Pennsylvania. Other raw materials include clay, sand, slag, gypsum, fluorspar, iron ore, and mill scale in eastern Pennsylvania and shale, sand, slag, gypsum, iron ore, and mill scale in western Pennsylvania. Eastern Pennsylvania cement plants purchased 677 million kilowatt-hours, western plants 271 million kilowatt-hours.

Prepared masonry cement shipped from 16 plants in eastern Pennsylvania totaled 1.9 million barrels at an average price of $2.62 per barrel, of which 21 percent was shipped to locations in eastern Pennsylvania, 29 percent to New Jersey, 18 percent to New York, 7 percent to Virginia, 6 percent to Maryland, 5 percent to Connecticut, and 5 percent to the District of Columbia. Shipments of prepared masonry cement from western Pennsylvania totaled 1 million barrels at $2.90 per barrel, of which 52 percent was shipped to locations in western Pennsylvania, 38 percent to Ohio, 4 percent to West Virginia, and 4 percent to Michigan.

The leading portland cement producer was Northampton County with 44 percent of the total production, followed by Lehigh County with 16 percent of the total. Other counties producing cement were Allegheny, Butler, and Lawrence in the west, and Berks, Montgomery, and York in the east. Northampton County was also the leading masonry cement producer with 30 percent of the total production.

Clays.—Total production of clays (excluding kaolin) decreased 9 percent in tonnage and 2 percent in value from that of 1966. Fire clay accounted for 48 percent of the total production, decreasing 11 percent in tonnage and increasing 5 percent in value over that of 1966. Miscellaneous clay and shale accounted for the remaining 52 percent of the total, decreasing 7 percent in tonnage and 13 percent in value from that of 1966.

Table 6.—Clays sold or used by producers, by kinds and uses [1]

(Short tons)

Use	Fire clay		Miscellaneous clay	
	1966	1967	1966	1967
Refractories:				
Firebrick and block	738,262	623,661	----------	----------
Fire clay mortar	W	W	----------	----------
Heavy clay products	627,370	556,018	1,404,763	1,343,447
Portland and other hydraulic cements	----------	----------	227,120	W
Undistributed	[2] 254,609	[2] 255,547	[3] 40,990	[3] 215,418
Total	1,620,241	1,435,226	1,672,873	1,558,865

W Withheld to avoid disclosing individual company confidential data.
[1] Excludes kaolin.
[2] Includes exports, art pottery, floor and wall tile, high-alumina brick, mortar, clay crucibles, foundries and steelworks (bulk), other refractories, insecticides and fungicides, other filler, ahsorbent uses (1966), and other uses (1966).
[3] Includes art pottery, flowerpots, and glaze slip; floor and wall tile; foundries and steelworks (bulk); lightweight aggregate; portland hydraulic cements (1967), and linoleum and oil cloth.

Clearfield County was the leading clay producer, followed by Lawrence, Beaver, and Berks Counties. Of the total fire clay produced, 43 percent was used for firebrick and block and 39 percent for building brick and other heavy clay products. Of the total miscellaneous clay and shale produced, 86 percent was used for building brick and other heavy clay products and 8 percent for portland and other hydraulic cements.

Kaolin was produced in Blair County

for firebrick and block and in Cumberland County for white cement.

Gem Stones.—Mineral specimens were collected chiefly by hobbyists and amateur lapidarists at scattered locations throughout the State.

Gypsum.—A gypsum-calcining plant was operated at Philadelphia using both domestic and imported crude gypsum.

Iodine.—One company in Lebanon County and one company in Washington County consumed crude iodine in the production of both inorganic and organic compounds.

Iron-Oxide Pigments.—Crude iron-oxide pigments were mined in the form of sulfur mud in Cambria County and extracted in the form of red iron oxide during the processing of bauxite to alumina in Allegheny County. Finished iron-oxide pigments were produced and shipped from two plants in Northampton County and one plant in Carbon County. Finished pigments included natural and manufactured black, brown, red, and yellow pigments, and mixtures of natural and manufactured red iron oxides.

Lime.—Production of lime (quicklime and hydrated lime) increased 8 percent in tonnage and value from that of 1966. Of the total production, 85 percent was quicklime and 15 percent hydrated lime. The average price per ton of quicklime increased from $13.86 to $14 while that of hydrated lime decreased from $16.92 to $16.44 per ton. The chemical and other industrial markets consumed 78 percent of the total lime production with the remaining 22 percent being distributed among refractory, agricultural, and construction markets. Sixteen plants were operated in 14 counties with Centre County ranking first in production with three large plants producing quicklime and hydrated lime accounting for 45 percent of the total lime tonnage and 39 percent of the total value. Of the 16 plants, three plants sold only quicklime, three plants sold only hydrated lime, one plant used quicklime, and nine plants sold and used quicklime and hydrated lime. Regenerated quicklime was consumed at a pulp and paper plant in Blair County. Of the total lime sold, 60 percent was consumed in Pennsylvania, 6 percent in New York, 7 percent in Ohio and 5 percent in New Jersey. The remainder was shipped to 16 other States, or exported.

Mica.—Crude scrap mica was produced at a mine in York County. The processed mica was used in paint, roofing, rubber (mold lubricant), insulation (electric), welding rods, and textile coating. After the company changed hands on July 1, 1967, production stopped because the new owners, Micalith Mining Co., Inc., were installing new equipment.

Perlite (Expanded).—Crude perlite from out-of-State sources was expanded at one plant each in Allegheny, Delaware, Lehigh, Montgomery, and York Counties. The Panacalite Perlite Co., previously operating in Allegheny County discontinued business as of December 30, 1966. Lehigh County continued to lead the State in expanded perlite production, which was used chiefly for building plaster with substantial amounts for loose fill insulation, concrete aggregate, soil conditioning, fines, cryogenic applications, and other uses.

Pyrites.—Pyrite concentrate was recovered by flotation in the milling process for magnetite iron ore in Berks and Lebanon Counties. The concentrate was then shipped to Sparrows Point, Md., for further processing.

Sand and Gravel.—Production of commercial sand and gravel decreased slightly in tonnage from that of 1966, but the value was virtually the same. Of the total commercial sand and gravel output, 50 percent was sand for construction (building, paving, fill, and other uses), 42 percent was gravel for construction (building, paving, railroad ballast, fill, and other uses), and 7 percent was unground sand for industrial uses (glass, molding, grinding and polishing, blast, fire or furnace, engine, and other uses). A small amount of ground sand was used for abrasives, chemicals, filler, glass, pottery, porcelain, tile, foundry, and other uses.

Bucks County was again the leading producing county, followed by Erie, Armstrong, Wyoming, and Westmoreland Counties. Production was reported in 42 counties by 115 operations, of which almost 56 percent produced less than 100,000 tons each for 14 percent of the total tonnage; 21 percent of the operations produced be-

Table 7.—Sand and gravel sold or used by producers, by classes of operations, and uses

(Thousand short tons and thousand dollars)

Class of operation and use	1966		1967	
	Quantity	Value	Quantity	Value
Commercial operations:				
Sand:				
Molding	185	$526	157	$461
Building	5,228	7,698	4,855	7,424
Paving	3,362	5,183	3,678	5,636
Fire or furnace	87	270	71	223
Fill	20	19	24	20
Undistributed [1]	1,490	5,054	1,292	4,336
Total	10,372	18,750	10,077	18,100
Gravel:				
Building	3,005	4,346	2,562	4,141
Paving	3,522	5,758	4,147	6,639
Fill	328	163	343	214
Undistributed [2]	292	472	298	441
Total	7,147	10,739	7,350	11,435
Total sand and gravel	17,519	29,489	17,427	29,535
Government-and-contractor operations:				
Sand:				
Paving	7	10	--	--
Other	--	--	52	79
Gravel:				
Other	41	63	--	--
Total sand and gravel	48	73	52	79
All operations:				
Sand	10,379	18,760	10,129	18,179
Gravel	7,188	10,802	7,350	11,435
Grand total	17,567	29,562	17,479	29,614

[1] Includes glass, grinding and polishing, blast, engine, ground, and other sand.
[2] Includes railroad ballast, miscellaneous, and other gravel.

tween 100,000 and 200,000 tons each for 21 percent of the total tonnage; 20 percent of the operations produced between 200,000 and 500,000 tons each for 39 percent of the total tonnage; almost 3 percent of the operations produced between 500,000 and 1 million tons each for 11 percent of the total tonnage; and less than 1 percent of the operations produced over 1 million tons each for 15 percent of the total tonnage.

Of the total production, 98 percent was processed; 75 percent was trucked to markets, and the balance was transported by railroads and waterways.

Operations receiving Certificates of Achievement for outstanding safety records in the Sand and Gravel Pit Group of the 1967 Pennsylvania National Saftey Competition were Seidle Sand and Gravel, Inc., with 30,508 man-hours without a disabling work injury; Houdaille Construction Materials, Inc., with 28,355 man-hours; Tionesta Sand & Gravel, Inc., with 27,644 man-hours; Mahoning Valley Sand Co., with 24,413 man-hours; Shippingport Sand & Gravel Co., with 23,426 man-hours; and Atlas Sand and Gravel, Inc., with 22,854 man-hours. The General Concrete Products Corp., received a Certificate of Achievement in the Sand and Gravel Dredge Group with 30,246 man-hours without a disabling work injury.

Sericite-Schist.—Crude sericite-schist was produced from two mines in Adams County and processed for use as a carrier in insecticides, and as a filler in asphalt, enamel coating, and joint cement.

Stone.—Production of stone increased 2 percent in total tonnage and 4 percent in total value from that of 1966. Crushed stone totaled 60 million tons of which 84 percent was limestone, 7 percent basalt, 5 percent sandstone, and the remaining 4 percent granite, miscellaneous stone, and slate. Crushed stone was used for the fol-

lowing purposes: Concrete aggregate and roadstone (61 percent), furnace flux (10 percent), agricultural purposes (2 percent), railroad ballast (1 percent), and for other uses (26 percent) including cement and lime manufacture, riprap, and limestone dust for coal mines.

Dimension stone decreased 13 percent in tonnage but increased 13 percent in value over that of 1966 due to the greater value per ton placed on such items as blackboards, structural and sanitary ware, roofing slate, and building stone. Slate accounted for 31 percent of the dimension stone and 67 percent of its value with sandstone accounting for almost 50 percent of the tonnage and only a little less than 25 percent of the value. Northampton County was the leading stone producer in the State, followed by Montgomery, Adams, Centre, York, Lancaster, and Berks Counties.

Table 8.—Stone sold or used by producers, by uses

Use	1966		1967	
	Short tons	Value	Short tons	Value
Dimension stone:				
Building stone	108,023	$1,471,731	86,350	$1,417,097
Curbing and flagging	39,672	803,210	33,824	1,158,002
Other uses [1]	27,233	3,424,837	31,418	3,838,439
Total	174,928	5,699,778	151,592	6,413,538
Crushed and broken stone:				
Riprap	261,867	460,348	247,948	355,600
Concrete and roadstone	34,341,170	49,371,631	36,883,375	52,584,930
Furnace flux (limestone)	6,300,021	12,063,633	5,789,922	11,392,163
Railroad ballast	620,375	931,310	743,072	1,170,000
Agricultural	1,266,862	3,865,644	1,109,837	3,414,179
Other uses [2]	16,122,396	26,840,487	15,229.644	27,826,926
Total	58,912,691	93,533,053	60,003,798	96,743,798
Grand total	59,087,619	99,232,831	60,155,390	103,157,336

[1] Includes roofing slate and millstock.
[2] Includes refractory.

Table 9.—Stone sold or used by producers, by counties [1]

Counties	1966		1967	
	Short tons	Value	Short tons	Value
Allegheny, Clarion, Washington	505,685	$1,016,852	623,025	$1,267,141
Armstrong	374,865	783,240	443,466	926,233
Bedford, Franklin, Fulton	2,008,284	3,374,442	1,881,679	3,014,799
Berks	4,193,398	5,156,998	3,594,171	4,755,658
Blair	1,548,793	2,413,892	1,523,130	1,840,225
Bradford	622	14,130	----------	----------
Bucks	3,359,514	4,429,945	3,228,622	4,397,743
Butler	1,545,155	2,836,619	1,617,615	2,965,425
Cambria	13,000	29,750	W	W
Carbon, Monroe, Schuylkill	1,001,854	2,215,703	842,200	2,058,510
Centre	2,735,923	4,405,167	3,955,433	5,911,462
Chester	2,390,644	4,910,888	2,056,913	3,886,961
Clinton, Lycoming, Union	1,271,793	1,831,907	W	W
Cumberland	1,022,042	1,493,026	1,036,395	1,658,776
Dauphin	944,610	1,550,200	1,000,641	1,616,784
Elk, McKean, Potter	63,799	249,773	58,033	227,107
Fayette, Somerset	1,543,745	3,272,849	1,421,753	3,131,353
Jefferson	15,959	65,337	W	W
Lancaster	3,970,226	5,422,535	3,644,319	5,205,261
Lawrence	2,959,272	4,513,284	W	W
Lebanon	1,903,329	3,317,489	1,726,918	3,068,707
Lehigh	2,644,281	2,783,264	2,376,877	2,644,290
Luzerne	496,652	757,054	618,695	862,302
Mifflin, Snyder	460,357	650,542	620,758	810,185
Montgomery	4,896,509	8,552,323	5,374,449	8,908,142
Northampton	5,783,588	9,116,035	5,737,419	9,442,866
Northumberland	68,840	111,840	70,300	112,800
Susquehanna	184,710	483,622	W	W
Wayne	123,329	263,696	W	W
Westmoreland	683,264	1,164,874	1,440,369	2,825,337
York	3,734,221	7,625,364	3,772,434	8,281,017
Other counties [2]	6,639,356	14,420,191	11,489,776	23,338,252
Total	59,087,619	99,232,831	60,155,390	103,157,336

W Withheld to avoid disclosing individual company confidential data; included with "Other counties."
[1] Excludes counties with no stone production.
[2] Includes Adams, Columbia, Delaware, Huntingdon, Mercer, Montour, Perry, and Wyoming Counties and data indicated by symbol W.

Trophy winner in the 1967 Pennsylvania National Safety Competition in the Quarry Group was the Annville plant, Bethlehem Mines Corp. for operating 468,188 man-hours without a disabling work injury. Other operations competing in the Quarry Group received Certificates of Achievement for their outstanding safety record. The top runnerup was the Hanover quarry, Bethlehem Steel Corp. with 359,776 man-hours without a disabling work injury, followed by Charmian quarry, General Aniline & Film Corp. with 205,232 man-hours, and Hillsville quarry, United States Steel Corp. with 196,442 man-hours.

Sulfur.—Two refineries recovered sulfur in Delaware County, one using the Claus-type process and the other using single-stage catalytic oxidation of hydrogen sulfide. In Philadelphia County, one refinery recovered hydrogen sulfide by the Girdler system using diethanolamine and monethanolamine and molten sulfur by the improved Claus-type process, another refinery recovered sulfur by the Claus process.

Tripoli. (Rottenstone).—Tripoli was mined and processed by two companies in Lycoming County for use as an abrasive compound and filler material.

Vermiculite (Exfoliated).—Crude vermiculite was processed at two plants, one in Bucks County and one in Lawrence County, and the exfoliated product was sold for various uses, chiefly for insulation, concrete aggregate, and agriculture.

METALS

Cadmium.—Cadmium production decreased considerably from that of 1966. Cadmium was recovered by St. Joseph Lead Co. at its Josephtown plant in Beaver County and by The New Jersey Zinc Co. at its Palmerton plant in Carbon County.

Cobalt.—The cobalt content of pyrite concentrate shipments from the magnetic iron ore mines in Berks and Lebanon Counties showed a slight decrease from that of 1966.

Copper, Gold, and Silver.—Copper concentrate was recovered by flotation of magnetite iron ore mined in Lebanon County and shipped to western refineries for processing. The concentrate also contained gold and silver.

Ferroalloys.—Producers of ferroalloys in 1967 by type of product and furnace were ferromanganese by blast furnace, Bethlehem Steel Co. at Bethlehem, E. J. Lavino & Co. at Sheridan, and United States Steel Corp. at Clairton and Duquesne; ferromolybdenum by aluminothermic furnace, Climax Molybdenum Co. at Langeloth, and Molybdenum Corporation of America at Washington which also used electric furnaces; ferrocolumbium, Kawecki Chemical Co. at Easton; spiegeleisen by electric furnace, The New Jersey Zinc Co. at Palmerton; ferroboron, ferrocolumbium, ferrovanadium, ferromolybdenum, and nickel columbium by aluminothermic furnace, Reading Alloys Co., Inc. at Robesonia.

Iron Ore.—Usable iron ore production and shipments decreased 5 percent in quantity and 9 percent in value from those of 1966. Shipments were in the form of pellets produced at agglomerating plants located at the magnetite mines in Berks and Lebanon Counties. Crude magnetite was mined underground by block-caving methods. Most of the iron ore pellets were shipped to company-owned iron and steel plants in the State and in Maryland.

Iron and Steel.—Pig iron production totaled 20.5 million tons, of which 92 percent was basic pig iron, and the remainder Bessemer, malleable, foundry, and direct castings pig iron.

Receipts of iron ore totaled 26.8 million tons, 68 percent from foreign countries and 32 percent from domestic sources. Consumption of iron ore totaled 24.7 million tons, 53 percent by agglomerating plants, 41 percent by blast furnaces, and the remainder by steel furnaces. Iron ore stock at beginning of the year was 11.3 million tons and 12.2 million tons at yearend. Fluxes consumed by the iron and steel industry included 2.9 million tons of limestone, 2.5 million tons of dolomite, and 927,000 tons of other type fluxes. Other materials consumed included 1.6 million tons of mill cinder and roll scale, 889,000 tons of raw flue dust, 1.2 million tons of steel furnace slag, 13 million tons of coke, 336,000 tons of coke breeze, and 383,000 tons of anthracite. Steel furnaces consumed 19.8 million tons of pig iron and hot metal and 10.5 million tons of home and purchased scrap. Blast furnaces consumed 752,000 tons of home and purchased scrap,

290,000 tons of slag scrap, and 75,000 tons of pig iron and hot metal.

Agglomerates consumed in blast furnaces totaled 21.5 million tons, of which 55 percent was U.S. sinter (regular) and the remaining 45 percent was iron ore pellets (regular), semifluxing and self-fluxing sinter, and agglomerated foreign iron ore. Agglomerates consumed in steel furnaces totaled 266,000 tons, of which most were iron ore pellets (regular). Slag produced at blast furnaces totaled 5.9 million tons, scrap produced 159,000 tons, and flue dust recovered 825,000 tons.

Nine companies with 20 plants operated 46 blast furnaces at some time during the year, compared with 51 blast furnaces in 1966.

According to the American Iron and Steel Institute, steel production (ingots and steel for castings) totaled 29.9 million tons, of which 20.9 million tons were from open hearth and Bessemer, 5.9 million tons from basic oxygen process, and 3.2 million tons from electric furnaces. Production of hot-rolled steel products totaled 21.1 million tons, merchant bars and light shapes 2.4 million tons, concrete reinforcing bars 872,000 tons, wire rods 732,000 tons, and blanks, tube rounds or pierced billets for seamless tubing 1.7 million ton.

Zinc.—Production of zinc ore (based on the recoverable zinc metal tonnage) increased 25 percent over that of 1966, although unit value decreased. The zinc ore was concentrated at the mine in Lehigh County and the concentrates were shipped to the company's smelter in Carbon County.

Smelters—Zinc concentrates were shipped to smelters at Josephtown in Beaver County and Palmerton in Carbon County. Zinc concentrates shipped to the Josephtown smelter came from New York, Missouri, Illinois, and Tennessee, and from Canada, and Peru. Zinc concentrates and crude ore and residues shipped to the Palmerton smelter came from New Jersey, New York, Pennsylvania, Tennessee, Indiana, Virginia, Colorado, and several foreign countries. Products from the Josephtown smelter included zinc metal lead-free zinc oxide, cadmium metal, and sulfuric acid, which were used in such consumer items as galvanized ware, die castings, and brass in the case of zinc, paint, rubber, ceramics, and pharmaceuticals in the case of zinc oxide, and protective coatings, bearings and atomic uses in the case of cadmium. Products from the Palmerton smelter included slab zinc, zinc base die casting alloys, zinc oxide, rolled zinc, dry-battery shells, cadmium, and spiegeleisen.

Table 10.—Principal producers

Commodity and company	Type of activity	County	Address
Abrasives:			
Nonmetallic:			
Satellite Alloy Corp	Plant	Allegheny	9800 McKnight Rd. Pittsburgh, Pa.
Metallic:			
Abrasive Metals Co	Plant	----do	26th and B.&O. RR Pittsburgh, Pa.
Durastel Abrasive Co	----do	Westmoreland	2601 Smallman St. Pittsburgh, Pa.
Industeel Corp	----do	Allegheny	37th and A.V. RR Pittsburgh, Pa.
The Pangborn Corp., Roto-blast Abrasive Division.	----do	Butler	P.O. Box 280 Hagerstown, Md.
Clay and shale:			
Fire clay:			
C. Brant Mining Co	Open Cut	Somerset	R.D. 3 Somerset, Pa.
Continental Clay Products Co.	Underground	Armstrong	Kittanning, Pa.
Drexel Refractories	----do	----do	P.O. Box 50 Kittanning, Pa.
Eastvale Clay Products Co	----do	Beaver	Box 681 Beaver Falls, Pa.
Falls Creek Refractories Co	Open cut	Clearfield	Falls Creek, Pa.
Freeport Brick Co	Underground	Armstrong	Drawer F. Freeport, Pa.
Freeport Brick Co., Kittanning Brick Division.	----do	----do	R.D. 1 Adrian, Pa.
General Refractories Co	Open cut	Somerset	1520 Locust St. Philadelphia, Pa.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Type of activity	County	Address
Clay and shale—Continued			
Fire—Continued			
Hanley Co	Underground	Jefferson	28 Kennedy St. Bradford, Pa.
Harbison-Walker Refractories Co.	do	Armstrong	2 Gateway Center Pittsburgh, Pa.
Do	Open cut	Cambria	Do.
Do	do	Clearfield	Do.
Do	Underground	do	Do.
Do	Open cut	Fayette	Do.
Kaiser Refractories, Division of Kaiser Aluminum & Chemical Corp.	Strip	do	P.O. Box 363 Frostburg, Md.
Narvon Mines Ltd	Open cut	Lancaster	Narvon, Pa.
The Negley Fire Clay Co	do	Lawrence	Box 264 New Galilee, Pa.
Standard Clay Manufacturing Co.	Underground	Beaver	Box 98 New Brighton, Pa.
Hiram Swank's Sons, Inc	Open cut	Clearfield	P.O. Drawer 630 Johnstown, Pa.
Ralph A. Veon, Inc	do	Lawrence	Darlington, Pa.
Kaolin:			
Grannas Brothers	Open cut	Blair	R.D. 2, Box 399 Hollidaysburg, Pa.
The Philadelphia Clay Co	do	Cumberland	236 West North St. Carlisle, Pa.
Miscellaneous:			
American Vitrified Products Co.	Open cut	Clearfield	700 National City Bank Building Cleveland, Ohio
Fenati Brick Co., Inc	do	Lawrence	New Castle, Pa.
Glen-Gery Shale Brick Corp	do	Berks	227 North 5th St. Reading, Pa.
Do	do	Dauphin	Do.
Do	do	Lancaster	Do.
Do	do	Northumberland	Do.
Do	do	York	Do.
Hanley Co	do	McKean	28 Kennedy St. Bradford, Pa.
Logan Clay Products Co. Worthington Ceramics Division.	do	Armstrong	Worthington, Pa.
McAvoy Vitrified Brick Co	do	Chester	Phoenixville, Pa.
Medusa Portland Cement Co	do	Lawrence	P.O. Box 5668 Cleveland, Ohio
Milliken Brick Co., Inc	do	Allegheny	2100 Montier St. Pittsburgh, Pa.
Quakertown Brick & Tile Co., Inc.	do	Bucks	Quakertown, Pa.
The Robinson Clay Product Co.	do	Montgomery	65 West State St. Akron, Ohio
Triangle Clay Products Co	do	Cambria	Sheridan St. Johnstown, Pa.
Universal Atlas Cement Division United States Steel Corp.	do	Monroe	Chatham Center Box 2969 Pittsburgh, Pa.
Watsontown Brick Co	do	Northumberland	Watsontown, Pa.
Cement:			
Allentown Portland Cement Co	Plant	Berks	7th St. at Thruway Allentown, Pa.
Do	do	Montgomery	Do.
Bessemer Cement Co., Division of Diamond Shamrock Corp.	do	Lawrence	800 Stambaugh Bldg. Youngstown, Ohio
Coplay Cement Manufacturing Co.	do	Lehigh	North 2d St. Coplay, Pa.
G. & W. H. Corson, Inc	do	Montgomery	Plymouth Meeting, Pa.
Dragon Cement Co., Division of Martin Marietta Corp.	do	Northampton	5A Joyce Kilmer Ave. New Brunswick, N.J.
Giant Portland Cement Co	do	Lehigh	1500 Chestnut St. Philadelphia, Pa.
Green Bag Cement Co., Division of Marquette Cement Manufacturing Co.	do	Allegheny	20 N. Wacker Dr. Chicago, Ill.
Hercules Cement Co., Division of American Cement Corp.	do	Northampton	555 City Line Ave. Bala-Cynwyd, Pa.
Keystone Portland Cement Co	do	do	1400 South Penn Square Philadelphia, Pa.
Lehigh Portland Cement Co	do	Lehigh	718 Hamilton St. Allentown, Pa.
Lone Star Cement Corp	do	Northampton	P.O. Box 6237 Richmond, Va.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Type of activity	County	Address
Cement—Continued			
Medusa Portland Cement Co	Plant	Lawrence	P.O. Box 5668 Cleveland, Ohio
Do	do	York	Do.
National Portland Cement Co	do	Northampton	170 East Post Rd. White Plains, N.Y.
Nazareth Cement Co	do	do	Easton Rd. Nazareth, Pa.
Penn-Dixie Cement Corp	Plant	Butler	P.O. Box 152 Nazareth, Pa.
Do	do	Northampton	Do.
Universal Atlas Cement Division United States Steel Corp.	do	Allegheny	Chatham Center Pittsburgh, Pa.
Do	do	Northampton	Do.
The Whitehall Cement Manufacturing Co.	do	Lehigh	123 South Broad St. Philadelphia, Pa.
Coal:			
Anthracite:			
Blue Coal Corp	Strip mine	Luzerne	101 South Main St. Ashley, Pa.
Carbondale Coal Co., Inc	do	Lackawanna	78 Cottage St. Carbondale, Pa.
Gangloff Brothers	Bank operation	Northumberland	New Ringgold, Pa.
Glen Nan Coal Co., Inc	Deep mine	Luzerne	Wilkes Barre, Pa.
Greenwood Stripping Corp	Stripmine	Schuylkill	One Venice St. Nesquehoning Pa.
Honeybrook Mines, Inc	do	do	109 East 1st St. Hazleton, Pa.
Jeddo-Highland Coal Co	do	Luzerne	800 Exeter Ave. West Pittston, Pa.
Kerris & Helfrick, Inc	do	Northumberland	Lehigh & Poplar St. Mount Carmel, Pa.
Lehigh Valley Anthracite, Inc	do	Columbia	800 Exeter Ave. West Pittston, Pa.
Do	do	Schuylkill	Do.
George Racho	Bank operation	Luzerne	371 Church St. Hazleton, Pa.
Reading Anthractie Co	Strip mine	Northumberland	200 Mahantango St. Pottsville, Pa.
State Coal Co., Inc	Bank operation	do	109 E. 1st St. Hazleton, Pa.
Bituminous:			
Barnes & Tucker Co	Underground	Cambria	357 Lancaster Ave. Haverford, Pa.
Do	do	Indiana	Do.
Bethlehem Mines Corp. [1]	do	Cambria	701 E. 3rd St. Bethlehem, Pa.
Do [1]	do	Washington	Do.
Buckeye Coal Co	do	Greene	P.O. Box 900 Youngstown, Ohio
Gateway Coal Co. for J & L	do	do	Box 608 California, Pa.
Harmar Coal Co	do	Allegheny	Box 500 Library, Pa.
Jones & Laughlin Steel Corp	do	Greene	Box 608 California, Pa.
Mathies Coal Co	do	Washington	Box 500 Library, Pa.
Pittsburgh Coal Co	do	do	Do.
United States Steel Corp	do	Greene	525 Wm. Penn Place Pittsburgh, Pa.
Graphite (synthetic):			
Stackpole Carbon Co	Plant	Elk	St. Marys, Pa.
Gypsum (calcined):			
United States Gypsum Co. [2]	do	Philadelphia	101 South Wacker Dr. Chicago, Ill.
Iron Ore:			
Bethlehem Mines Corp. [3]	Underground	Berks	Bethlehem, Pa.
Do. [1]	do	Lebanon	Do.
Iron oxide pigments:			
Crude:			
Allegheny Ludlum Steel Corp	Plant	Allegheny	2000 Oliver Bldg. Pittsburgh, Pa.
Lanzendorfer Minerals Co	Open pit	Cambria	Twin Rocks, Pa.
Finished:			
Minerals, Pigments, & Metals Division Chas. Pfizer & Co., Inc.	Plant	Northampton	640 North 13th St. Easton, Pa.
The Prince Manufacturing Co	do	Carbon	Bowmanstown, Pa.
Reichard-Coulston, Inc	do	Northampton	15 East 26th St. New York, N.Y.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Type of activity	County	Address
Lime:			
Primary:			
Baker Stone Co	Plant	Columbia	R.D. 5 Bloomsburg, Pa.
The J. E. Baker Co	----do	York	P.O. Box 1189 York, Pa.
Bethlehem Mines Corp	----do	Adams	701 East 3rd St. Bethlehem, Pa.
Do	----do	Lebanon	Do.
G. & W. H. Corson, Inc	----do	Montgomery	Plymouth Meeting, Pa.
Mercer Lime & Stone Co	----do	Butler	Branchton, Pa.
National Gypsum Co	----do	Centre	325 Delaware Ave. Buffalo, N.Y.
Standard Lime & Refrac. Co., Division Martin Marietta Corp.	----do	----do	2000 First National Bank Building Baltimore, Md.
Warner Co	----do	----do	1721 Arch St. Philadelphia, Pa.
Do	----do	Chester	Do.
Regenerated:			
West Virginia Pulp & Paper Co.	Plant	Blair	Tyrone, Pa.
Mica (crude):			
General Mining Associates	Pit	York	700 Cathedral St. Baltimore, Md.
Peat:			
Blue Ridge Soil Pep Co	Bog	Luzerne	R.D. 2 White Haven, Pa.
D. M. Boyd Co	----do	Lawrence	226 Francis St. New Wilmington, Pa.
Corry Peat Products Co	Bog	Erie	515 West Columbus Ave. Corry, Pa.
Lake Linda Peat Co., Inc	----do	Lackawanna	Dalton, Pa.
Pennsylvania Peat Moss, Inc	----do	Luzerne	21st & Laurel Sts. Hazelton, Pa.
Stillers Blue Ridge Peat Co	----do	----do	R.D. White Haven, Pa.
Wayne Peat Humus Co	----do	Wayne	P.O. Box 315 Gouldsboro, Pa.
Welker Greenhouses, Inc	----do	Lawrence	New Castle, Pa.
Perlite (expanded):			
Insul-Fil Manufacturing Co	Plant	Delaware	Box 325 Primos, Pa.
Pennsylvania Perlite Corp	----do	Lehigh	P.O. Box 2002 Lehigh Valley, Pa.
Do	----do	York	Do.
Perlite Manufacturing Co	----do	Allegheny	P.O. Box 478 Carnegie, Pa.
Refractory & Insulation Co	----do	Montgomery	Port Kennedy, Pa.
Petroleum refineries:			
Atlantic Richfield Co	Plant	Philadelphia	
Franklin Refinery, Division of Sonneborn Sons, Inc.	----do	Venango	
Gulf Oil Corp	----do	Erie	
Kendall Refining Co., Division of Witco Chemical Co.	----do	McKean	
Pennsylvania Refining Co	Plant	Butler	
Pennzoil Company	----do	Venango	
Quaker State Oil Refining Corp	----do	McKean	
Do	----do	Venango	
Sinclair Refining Co	----do	Delaware	
Sun Oil Company	----do	----do	
United Refining Co	----do	Warren	
Valvoline Oil Co., Division of Ashland Oil and Refining Co.	----do	Beaver	
Wolf's Head Oil Refining Co., Inc	----do	Venango	
Sand and gravel:			
Davison Sand & Gravel Co	Dredge	Westmoreland	3rd Ave. & 4th St. New Kensington, Pa.
Emlenton Limestone Co	Pit	Armstrong	Box 67 Emlenton, Pa.
Erie Sand Steamship Co	Dredge	Erie	Erie, Pa.
Glacial Sand & Gravel Co	Pit	Armstrong	P.O. Box 10 Kittanning, Pa.
Do	----do	Clarion	Do.
Lycoming Silica Sand Co	----do	Lycoming	401 Broad St. Box 159 Montoursville, Pa.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Type of activity	County	Address
Sand and gravel—Continued			
Mt. Cydonia Sand Co., Inc.	Pit	Franklin	R.D. 1 Fayetteville, Pa.
Oil City Sand & Gravel Co	do	Venango	Wyllis & Front Sts. Oil City, Pa.
Pennsylvania Glass Sand Corp	do	Huntingdon	Hancock, W. Va.
Do	do	Mifflin	Do.
Pennsy Supply, Inc	do	York	1001 Paxton St. Harrisburg, Pa.
State Aggregates, Inc	do	Bradford	635 Lucknow Lane Harrisburg, Pa.
The Liberty Corp	Dredge	Philadelphia	No. 2 Penn Center Plaza Philadelphia, Pa.
Tionesta Sand & Gravel, Inc	Pit	Forest	Hawthorne, Pa.
Warner Co	do	Bucks	1721 Arch St. Philadelphia, Pa.
Wyoming Sand & Stone Co	do	Wyoming	Falls, Pa.
Smelters (zinc):			
The New Jersey Zinc Co	Plant	Carbon	Palmerton, Pa.
St. Joseph Lead Co	do	Beaver	Josephtown, Pa.
Stone:			
Basalt (crushed):			
Bradford Hills Quarries, Inc.	Quarry	Berks	Box 231 Easton, Pa.
Bucks County Crushed Stone, Inc,	do	Bucks	Ottsville, Pa.
V. Di Francesco & Sons	do	Chester	17 Mifflin Ave. Havertown, Pa.
Do	do	Delaware	Do.
The John T. Dyer Quarry Co.	Quarry	Berks	Box 188 Birdsboro, Pa.
Faylor Lime & Stone Co	do	Dauphin	Winfield, Pa.
General Aniline & Film Corp. The Ruberoid Division.	do	Adams	140 West 51st St. New York, N.Y.
The General Crushed Stone Co.	do	Bucks	712 Drake Bldg. Easton, Pa.
Do	do	Delaware	Do.
Vernon B. Horn	do	Bucks	R.D. Chalfont, Pa.
Keystone Trappe Rock Co	do	Chester	Glenmoore, Pa.
Kibblehouse Quarries, Inc	do	Montgomery	Perkiomenville, Pa.
Montgomery Stone Co., Inc.	do	do	Montgomeryville, Pa.
Pottstown Trap Rock Quarries, Inc.	do	Berks	R.D. 1 Douglasville, Pa.
Do	do	Montgomery	Do.
Tohickon Quarry Co	do	Bucks	Quakertown, Pa.
Basalt (Dimension):			
Coopersburg Granite Co	do	Bucks	Coopersburg, Pa.
French Creek Granite Co	do	Chester	St. Peters, Pa.
Montgomery Stone Co., Inc. [5]	do	Montgomery	Montgomeryville, Pa.
Granite (crushed):			
Mignatti Constr. Co., Inc	do	do	2310 Terwood Ave. Bethayres, Pa.
Granite (dimension):			
Carl Galantino, Inc	Quarry	Delaware	42 Hirst Ave. E. Lansdowne, Pa.
Marcolina Bros., Inc	do	Montgomery	133 E. Mermaid Lane Chestnut Hill, Pa.
Limestone (crushed):			
Appalachian Stone Division Martin Marietta Corp.	Quarry	Fayette	Box 120 Mercersburg, Pa.
The J. E. Baker Co	do	York	P.O. Box 1189 York, Pa.
Bethlehem Mines Corp	do	Adams	701 E. 3rd St Bethlehem, Pa.
Do	do	Lebanon	Do.
Do	do	Montgomery	Do.
Bradford Hills Quarries, Inc.	do	Chester	Box 231 Easton, Pa.
G. & W. H. Corson, Inc	do	Montgomery	Plymouth Meeting, Pa.
Eureka Stone Quarry, Inc	do	Bucks	Lower State and Pickertown Rds. Eureka, Pa.
National Gypsum Co	Underground	Centre	325 Delaware Ave. Buffalo, N.Y.
Do	Quarry	York	Do.
New Hope Crushed Stone & Lime Co.	do	Bucks	New Hope, Pa.
Nittany Materials, Inc	do	Centre	P.O. Box 138 State College, Pa.
Thomasville Stone & Lime Co.	Underground and quarry.	York	Thomasville, Pa.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Type of activity	County	Address
Stone—Continued			
Limestone crushed—Continued			
Warner Company	Underground	Centre	1721 Arch St. Philadelphia, Pa.
United States Steel Corp	Quarry	Lawrence	Hillsville, Pa.
Miscellaneous (crushed):			
Better Materials Corp	----do	Bucks	Route 232 & Swamp Rd. Penns Park, Pa.
Gill Quarries, Inc	----do	----do	P.O. Box 187 Fairview Village, Pa.
Do	----do	Montgomery	Do.
M & M Stone Co	----do	----do	Harleysville, Pa.
Miscellaneous (dimension):			
Burdo & Burdo	----do	Montgomery	29 Washington Ave. Belmont Heights Philadelphia, Pa.
F. Cantono & Sons	----do	Delaware	1749 Rowan St. Philadelphia, Pa.
Di Bonaventura Quarries, Inc.	----do	----do	4989 W. Thompson St. Philadelphia, Pa.
Oystershell (crushed):			
Reading Poultry Food Co	Plant	Berks	Orrton & Noble Sts. Reading, Pa.
Sandstone (crushed):			
American Asphalt Paving Co.	Quarry	Luzerne	Box 95, R. D. 5 Shavertown, Pa.
Connellsville Bluestone Co	----do	Fayette	Box 20 Scottdale, Pa.
Coolbaugh Sand & Stone, Inc	----do	Luzerne	32 Railroad Ave. Scranton, Pa.
Detwilers Industries, Inc.	----do	Bedford	New Enterprise, Pa.
Eidemiller Enterprises, Inc	----do	Westmoreland	Greensburg, Pa.
Hall's Bluestone, Inc	----do	----do	Murrysville, Pa.
Harbison Walker Refractories Co.	----do	Huntingdon	2 Gateway Center Pittsburgh, Pa.
Do	----do	Schuylkill	Do.
Latrobe Construction Co	Underground	Westmoreland	P.O. Box 150 Latrobe, Pa.
North American Refractories Co.	Quarry	Carbon	6th Street Bldg. Cleveland, Ohio
Do	----do	Huntingdon	Do.
No. 1 Contracting Corp. of Delaware.	----do	Luzerne	Box 460 Pittston, Pa.
Do	----do	Northampton	Do.
Summit Quarries, Inc	----do	Schuylkill	P.O. Box 637 Pottsville, Pa.
Wayne Crushed Stone, Inc	----do	Wayne	Lake Ariel, Pa.
Sandstone (dimension):			
Delaware Quarries	----do	Bucks	Lumberville, Pa.
Firestone Products Co., Inc	----do	Montgomery	300 Willow Grove Ave. Glenside, Pa.
Lynn's Quarry	----do	Westmoreland	R.D. 3 Belle Vernon, Pa.
Media Quarry Co	----do	Delaware	131 E. 2d St. Media, Pa.
Mitchell Stone Co	----do	Susquehanna	Box 133 Springville, Pa.
Penn Kress Flagstone Co., Inc.	----do	Potter	Bridge St. Pittsburgh, Pa.
Powers Bros, Quarries	----do	Susquehanna	R.D. 5 Montrose, Pa.
J. G. Robinson, Inc	----do	Wyoming	P.O. Box 6 Fort Washington, Pa.
Paul Tompkins Estate	----do	Wayne	Hancock, N.Y.
Valley Forge Building Stone	----do	Chester	P.O. Box 195 Morgantown, Pa.
Slate (crushed):			
General Aniline & Film Corp. The Ruberoid Div.	----do	York	140 West 51st St. New York, N.Y.
Keystone Filler & Manfacturing Co.	----do	Lycoming	Muncy, Pa.
North Bangor Slate Co	----do	Northampton	Bangor, Pa.
Pennsylvania Lightweight Aggregate, Inc.	Plant	----do	Do.
Slate (dimension):			
Albion Vein Slate Co	Quarry	----do	Do.
Capitol Slate Co., Inc	----do	----do	P.O. Box 281 East Bangor, Pa.
Anthony Dally & Sons, Inc	----do	----do	Robinson Ave. Pen Argyl, Pa.

See footnotes at end of table.

Table 10.—Principal producers—Continued

Commodity and company	Type of activity	County	Address
Stone—Continued			
Slate (dimension)—Continued			
Diamond Slate Co	Quarry	Northampton	P.O. Box 598 Pen Argyl, Pa.
Doney Slate Co	----do	----do	Pen Argyl, Pa.
Emerald Slate Corp	----do	----do	Alpha Road Wind Gap, Pa.
North Bangor Slate Co	----do	----do	Bangor, Pa.
Penn Big Bed Slate Co., Inc	----do	Lehigh	446 Main St. Slatington, Pa.
Stephens-Jackson Co	----do	Northampton	Main St. and Schanck Ave. Pen Argyl, Pa.
D. Stoddard & Sons, Inc	----do	----do	Bangor, Pa.
Sulfur:			
Atlantic Richfield Co.[7]	Plant	Philadelphia	260 S. Broad St. Philadelphia, Pa.
Gulf Oil Corp.[8]	----do	----do	P.O. Box 7408 Philadelphia, Pa.
Sinclair Refining Co	----do	Delaware	600 Fifth Ave. New York, N.Y.
Sun Oil Co	----do	----do	1608 Walnut St. Philadelphia, Pa.
Talc (sericite schist):			
Summit Industries, Inc.[9]	Pit	Adams	Drawer C Aspers, Pa.
Tripoli (rottenstone):			
Keystone Filler & Manufacturing Co.	----do	Lycoming	Muncy, Pa.
Penn Paint & Filler Co	----do	----do	Antes Fort, Pa.
Vermiculite (exfoliated):			
Hyzer & Lewellen	Plant	Bucks	P.O. Box 155 Southampton, Pa.
Zonolite Division, W. R. Grace & Co.	----do	Lawrence	62 Whittemore Ave. Cambridge, Mass.
Zinc:			
The New Jersey Zinc Co.[10]	Underground	Lehigh	160 Front St. New York, N.Y.

[1] 3 mines.
[2] Also expanded perlite.
[3] Also byproduct cobalt and pyrites.
[4] Also byproduct gold, silver, copper, cobalt, and pyrites.
[5] Also crushed basalt.
[6] Also a quarry in Somerset.
[7] Byproduct recovered in gas purification.
[8] Byproduct gas purification.
[9] 2 mines.
[10] Also byproduct limestone.

☆ U. S. GOVERNMENT PRINTING OFFICE : 1968 345-057/171

REVIEW BY COUNTIES

Adams.—Output of crushed limestone at three quarries was 28 percent more than that of the previous year. Greater demand for aggregate was the principal reason for the increase. Production at Bethlehem Mines Corp.'s Hanover quarry was chiefly fluxstone for blast-and open-hearth furnaces and the company's nearby lime plant. Quicklime production was used exclusively for basic oxygen steel furnaces. Output was shipped mainly to the company's Sparrows Point, Md. steel plant. Teeter Stone Division of Harry T. Campbell Sons Corp. also produced limestone for concrete aggregate and roadstone at its Gettysburg and Fairfield plants. The Ruberoid Division of General Aniline & Film Corp., produced roofing granules and crushed stone for tennis court surfacing and asphalt filler from basalt rock quarried near Charmian. Sericite schist was produced by Summit Industries, Inc. at two open-pit mines near Mt. Hope and Bendersville. The crude material was trucked to the company mill at Aspers. After grinding it was shipped for consumption as asphalt and insecticide filler. Alwine Brick Co. mined shale at New Oxford for building brick manufacture.

Allegheny.—Bituminous coal production, most of which (83 percent) was from underground mines, was 5 percent below that of 1966. The county ranked seventh among the coal-producing areas in the State. Underground production was mostly from the Freeport and Double Freeport coal group and was mechanically loaded at all mines. Twenty-seven continuous mining machines were in use. Harmar Coal Co. and Republic Steel Corp., both with two active mines, were the leading underground producers. At strip mines, Aloe Coal Co. and Pittsburgh Coal Co. were the leading producers. The latter company also operated the county's only auger mine. Over 3.7 million tons of coal was cleaned at six preparation plants.

Universal Atlas Cement Division, United States Steel Corp., Universal, and Green Bag Cement Co., Division of Marquette Cement Manufacturing Co., Neville Island, Pittsburgh, produced portland and masonry cements. Cement shipments were mainly by truck in bulk to consumers chiefly in Western Pennsylvania. Primary customers were ready-mixed concrete companies. Significant quantities of locally available slag were used to produce portland cement. Green Bag Cement Co. obtained limestone from its Deckers Creek mine in West Virginia. The limestone was shipped to the cement plant by barge. Shale was produced by Milliken Brick Co., Inc., Wilkinsburg, for manufacturing building brick at its Wilkinsburg and Pitcairn plants. Clay and shale (undifferentiated) was produced and used for building brick manufacture by Glassmere Brick & Tile Co., Creighton, Monroeville Brick, Inc., Trafford, and Pitt & Suburban Brick Co., Inc., McKeesport.

Industrial sand for foundry use was recovered by Sidwell Loam Sand Co., Pittsburgh. Burrell Construction and Supply Co. produced sand for paving and fill from a deposit near Natrona Heights. McCrady, Inc., the principal producer, processed sand and gravel for use as paving aggregate and industrial sand for foundry uses. Sandstone quarried by Nick Gioia, Elizabeth, was used as irregular-shaped stone for retaining walls. Sandstone operations at Malli's Stone Quarry, Finleyville, was discontinued. Allegheny Ludlum Steel Corp. recovered crude red iron oxide pigments from red mud residue of a former aluminum reduction plant at Natrona. Perlite Manufacturing Co., Carnegie, produced expanded perlite from crude material shipped from out of the State. The output was used mainly in cryogenic applications. Quantities also were used for soil conditioning and building plaster aggregate, loose fill insulation, and concrete aggregate. The Panacalite Co., Pittsburgh, discontinued production of expanded perlite at the end of 1966.

Armstrong.—Bituminous coal production increased 10 percent above that of 1966 and totaled 5.9 million tons. The

county ranked sixth in coal production in the State. Of the total output, 71 percent was from underground mines, 24 percent from strip mines, and the balance from auger mines. Virtually the entire output from underground mines was mechanically loaded; 25 continuous miners were in operation. Leading underground mining companies were Rochester & Pittsburgh Coal Co., Allegheny River Mining Co. (3 mines), Leechburg Mining Co., and Canterbury Coal Co. Principal strip mining companies were B. & G. Construction Co., Inc. (2 mines), L. & E. Construction and Equipment Co., Inc. (5 mines), State Industries, Inc., and West Freedom Mining Corp. (4 mines). State Industries, Inc. was the leading producer of auger-mined coal. Over 2.8 million tons of coal was cleaned at nine preparation plants.

Tonnage and value of sand and gravel production increased 62 and 60 percent, respectively, and was at its highest level since 1963. Construction of Interstate Highway 80 was the principal reason for the higher output. Emlenton Limestone Co., Parker, Glacial Sand & Gravel Co., Tarrtown, and Manorville Sand Co., Manorville, processed both sand and gravel. John Cihat, Leechburg, processed sand for foundry uses. Clay output, mostly fire clay for manufacturing firebrick and block, was less than that of 1966. Logan Clay Products Co. recovered miscellaneous clay and shale near Worthington for the manufacture of vitrified sewer pipe at their Graff-Kittanning Division plant and drain tile at their Worthington Ceramics Division plant. Plastic fire clay was recovered from five underground mines. Freeport Brick Co., operating underground mines near Freeport and Adrian, was the leading producer. Drexel Refractories (formerly Howmet Corp.) operating an underground mine near Kittanning also was a significant producer. Production of crushed limestone was 18 percent higher than that of 1966. Bradys Bend Corp., a new producer, quarried and crushed stone near East Brady for concrete aggregate and roadstone. Five other limestone quarries were active: Mowrey & Good, McWilliams and Girty, Black Limestone Co., West Franklin Township, and Manor Minerals, Inc., Kittanning. C. D. McCanna Lime Plant produced limestone for production of hydrated agricultural lime at a plant near Kittanning.

Beaver.—Clay production was centered in the north-central part of the county near New Brighton and Darlington. Output, mostly fire clay for building brick manufacture, was recovered from three underground mines and two open pits. Leading producers were Standard Clay Manufacturing Co. and Colonial Clay Products Co., operators of underground clay mines at New Brighton and Fallston, respectively. Shale mined by Ralph A. Veon, Inc. from an open pit near Darlington was sold to produce building brick and vitrified sewer pipe. Output of sand and gravel continued to decline for the second consecutive year, and was slightly less than one-half of that produced in 1966. Shippingport Sand & Gravel Co., the principal producer, processed material at stationary plants near Georgetown and Shippingport. Darlington Ready Mix Co. and Ellwood Stone Co. continued to recover material from pits near Darlington and Ellwood City, respectively. Output of bituminous coal was substantially below that of 1966. Three strip mines and 1 underground mine were active. The county's only underground mine was operated by Peggs Run Coal Co., Inc., and produced coal from the Upper Freeport seam. Strip mines were operated by Dodds Coal, Inc. (2 mines) and Blum Coal Co.

Bedford.—Detwilers Industries, Inc., Imler, produced crushed sandstone for concrete aggregate and roadstone. Quartzite crushed by Leap Ganister Rock Co., Madley, was sold for foundry use. Crushed limestone, chiefly for roadstone, was produced by New Enterprise Stone & Lime Co. at its Ashcom quarry near Everett and by Bradford County Stone & Lime Co., New Paris. The former company produced a limited quantity of hydrated agricultural lime at its Ashcom plant. Feight Brothers produced a small quantity of building sand

near Everett. Production of bituminous coal declined substantially below that of 1966. Five underground and two strip mines were active. G. M. & W. Coal Co., operating two underground mines, was the leading producer. Most of the underground production was from the Barnett seam and the strip mine output was from the Kelley seam.

Berks.—Bethlehem Mines Corp. mined crude magnetite ore at its Grace Mine near Morgantown. A concentrating plant at the mine recovered iron ore by crushing, grinding, magnetic separation, and pelletizing of the fine-sized material. Pyrites (containing cobalt and copper) was recovered by flotation. The pyrite from this mine and the company's Cornwall mine in Lebanon County was shipped to a sulfuric acid plant at Sparrows Point, Md., for processing. Allentown Portland Cement Co., Division of National Gypsum Co., produced portland and masonry cements. Shipments of finished cement were mainly by truck in bulk to consumers chiefly in Eastern Pennsylvania and New Jersey. Production at the plant was affected by a labor dispute which closed the plant for 30 days.

Crushed limestone was the principal type of stone produced in the county and accounted for more than 74 percent of the total stone output. Allentown Portland Cement Co. with quarries near Evansville and Oley produced crushed limestone and cement rock for cement manufacture. Other large crushed limestone producers included Eastern Industries, Inc., with quarries at Kutztown and Oley; Berks Products Corp., South Temple, and E. J. Breneman, Inc., at Sinking Spring. Martin Stone Quarries, Bechtelsville, produced sandstone for concrete aggregate and roadstone. Three companies produced crushed basalt for sale mainly to the roadstone and railroad ballast markets. Producers were The John T. Dyer Quarry Co., Birdsboro, Pottstown Trap Rock Quarries, Inc., Douglassville, and Bradford Hills Quarry, Inc., Morgantown. Glen-Gery Shale Brick Corp. mined shale at open-cut mines near Wyomissing and Shoemakersville for manufacturing building brick. Berks Silica Sand Corp. processed mostly sand at their stationary plant near Kutztown. Products were building sand, and small quantities of silica flour and gravel for paving. For the third consecutive year production of anthracite coal declined.

Blair.—Stone output was nearly the same as that of the previous year. Limestone, the principal type of stone produced, was quarried at eight locations by seven companies and was used chiefly as concrete aggregate and roadstone with smaller quantities for agstone and asphalt filler. The leading producer was New Enterprise Stone & Lime Co. with operations at Roaring Spring and Canoe Creek. Other leading limestone producers were Narehood Bros., Inc., Tyrone, Grannas Bros. Stone & Asphalt Co., Inc., Hollidaysburg, and Eldorado Stone Co., Altoona. General Refractories Co. and J. L. Hartman Co. produced crushed quartzite for ganister at Hollidaysburg and Sproul, respectively. Frankstown Sand Supply crushed sandstone near Hollidaysburg for building purposes. Plastic fire clay mined by Harbison-Walker Refractories Co. and kaolin mined by Grannas Brothers from deposits near Williamsburg was used to manufacture firebrick. Bituminous coal production was sharply below that of the previous year. K & K Coal Co. operated an underground mine, and Cavalier Coal Co. operated a strip mine. West Virginia Pulp & Paper Co. regenerated quicklime in secondary recovery operations for use in manufacturing paper at its Tyrone plant.

Bradford.—State Aggregates, Inc., continued as the principal source for sand and gravel. Material recovered from three pits located near Towanda was processed and used for road subbase, and maintenance and antiskid uses. No bituminous coal production was reported in the county as in previous years.

Bucks.—The county continued to be the leading sand and gravel-producing area in the State. The principal producer, by far, was Warner Co. at the

largest plant in the State, the Van Sciver plant near Tullytown. Output was reported by six other companies. They were A. L. Lewis, Inc., with plants at Uhlerstown and New Hope, Clark Sand & Gravel Co., Inc. and Frank Casilio and Sons, Inc., both at Upper Black Eddy, Penn Valley Crushed Stone Co., Levittown, and Silvi Concrete Products, Tullytown. Limestone was the leading type of stone produced, followed by miscellaneous stone, basalt, and sandstone. Total stone output was slightly less than that of 1966. Eureka Stone Quarry, Inc., near Eureka, remained the principal limestone producer with all of its output used for concrete aggregate and roadstone. Additional quantities of crushed limestone were produced by New Hope Crushed Stone & Lime Co., New Hope.

Miscellaneous stone (argillite) was quarried by Better Materials Corp., Penns Park, and Gill Quarries, Inc., Trevose, for use in concrete aggregate and roadstone. Seven basalt quarries were in operation. The largest producers were the General Crushed Stone Co., Quakertown, Joseph Ciccone & Sons, Inc., Weisel, Bucks County Crushed Stone, Inc., Ottsville, and Vernon B. Horn, Chalfont. All of the output used was crushed for concrete aggregate and roadstone. George Wiley operated his sandstone quarry near Point Pleasant the first six months of the year prior to its sale to Colony Materials, Inc. Dimension sandstone, cut for architectural use, was produced by Delaware Quarries, near Lumberville. Quakertown Brick & Tile Co., Inc. mined shale near Quakertown for manufacturing building brick. Exfoliated vermiculite was produced at Southampton by Hyzer & Lewellen for use mainly in home insulation and as a lightweight concrete and plaster aggregate.

Butler.—Bituminous coal production was 6 percent below that of 1966. Of the total output, 66 percent was from 32 strip mines, 29 percent from 8 underground mines, and the remainder from 5 auger operations. Equipment in use at the strip mines included 37 power shovels and 29 draglines. Thirteen of the draglines had dipper capacities ranging from 6 to 12 cubic yards. Most of the strip mine production was in the Freeport and Middle and Lower Kittanning coal seams. Leading strip mine operators were Tri-County Fuel Co. (4 mines), Vanmac Corp. (2 mines), and Willowbrook Mining Co. (2 mines). Union Carbide Corp. was the leading underground mining company. Six cleaning plants prepared 29 percent of the total county output. Portland and masonry cements were manufactured by Penn-Dixie Cement Corp. at a plant near West Winfield. Most of the output was typed for general use and moderate heat, with large quantities of both air-entrained and non-air-entrained. Ready-mix concrete companies were the major consumers. The majority of shipments was in bulk by truck to consumers in the Western Pennsylvania area. The company produced the limestone and sand portions of its raw material requirements. Two 250-ft. kilns were in use.

Limestone production in excess of 1.6 million tons was quarried by five companies. Road building and cement manufacture were the principal markets. Some agstone and flux for iron and steel plants were sold. The three larger quarries were operated by Sechan Limestone Co., Portersville, Allegheny Mineral Corp., Harrisville, and Penn-Dixie Cement Corp., West Winfield. Dimension sandstone for architectural work was produced by Annandale Sandstone Co., Division of North Star Coal Co., near Boyers. Mercer Lime & Stone Co. produced mostly quicklime for consumption in steel furnaces at Branchton. H. W. Cooper and Highway Sand & Gravel Co., Inc., both of Slippery Rock, continued to supply consumers with building and paving aggregate.

Cambria.—Although production of bituminous coal decreased 5 percent, the county continued to rank third in output with 7.7 million tons of production. Of the total, 88 percent came from 57 underground mines. Most of the underground production was mechanically

loaded. At the underground mines, 85 continuous miners and 2 longwall mining machines were in operation. Leading underground coal producers were Bethlehem Mines Corp. (5 mines), Barnes & Tucker (3 mines), and Eastern Associated Coal Corp. (2 mines). Major strip mining companies were North Cambria Fuel Co. (7 mines) and Cooney Brothers Coal Co. (4 mines). The former company was also the leading producer of auger-mined coal. Seventy percent of the total output was cleaned at 10 preparation plants. Triangle Clay Products Co. mined miscellaneous clay at an open cut near Johnstown for building brick. Harbison-Walker Refractories Co. mined plastic fire clay near Blandburg for use in refractories. Buck Hill Coal Co. discontinued operations at its underground mine near Patton. Crushed sandstone production was reported for two operations near Johnstown for use as mortar sand, concrete and roadstone, and for silica brick. Lanzendorfer Minerals Co., Twin Rocks, produced sulfur mud for yellow iron oxide pigment.

Carbon.—Anthracite production increased from 461,000 tons in 1966 to 624,000 tons. Sixty-eight percent of the total output was shipped by rail and the remainder by truck. Leading producers included Greenwood Stripping Corp. and Manbeck Dredging Co., Inc. Sand for building and paving purposes and for cement manufacture was produced by Alliance Sand Co., Division of Martin Marietta Corp. at a stationary plant near Palmerton. Sand recovered by Refractory Sand Co., Inc., near Andreas, was used primarily for paving. Fauzio Brothers produced sandstone at its Red Rock quarry near Nesquehoning for concrete and roadstone. Refractory sandstone (ganister) was produced by North American Refractories Co. at Palmerton.

Centre.—The county continued as the leading lime-producing area and accounted for 45 percent of the State's total production. Output was 776,000 tons, 5 percent above that of 1966. Most of the ouput was quicklime for chemical and other industrial uses, chiefly for steel furnaces and paper and pulp mills. Producers were National Gypsum Co. and Warner Co. both near Bellefonte and Standard Lime & Refractories Co., Division Martin Marietta Corp., Pleasant Gap. Limestone production from seven quarries totaled nearly 4 million tons and was processed for concrete aggregate and roadstone, and for captive use in lime manufacture. Other uses included glass manufacture, rock dust for coal mines, flux, and stone sand. Leading producers were Nittany Materials, Inc., Marion Township, Warner Co., Bellefonte, Appalachian Stone Division, and Standard Lime & Refractories Co., both divisions of Martin Marietta Corp., Pleasant Gap, and National Gypsum Co., Bellefonte. The U.S. Army Corps of Engineers reported sand was produced under contract for projects in the area. Harbison-Walker Refractories shipped a limited quantity of plastic fire clay from stockpiles at its Blair Mine located near Stormstown. Coal production increased 11 percent to 786,000 tons. Production was chiefly from three underground mines. Rushton Mining Co. was the leading underground operator. Of the total county output 47 percent came from 12 strip mines. Leading producers were R. S. Carlin, Inc. (2 mines) and Elliot Coal Mining Co., Inc. (2 mines). Preparation plants were operated by Rushton Mining Co. and James M. Stott Coal Co.

Chester.—Crushed limestone, the principal kind of stone produced, was used chiefly for concrete aggregate and roadstone. Other uses included blast- and open-hearth furnace flux, lime manufacture, and magnesia plants. Limestone producers were Bradford Hills Quarries, Inc., Downingtown, Warner Co., Devault and Paoli; and Appalachian Stone Division, Martin Marietta Corp., Malvern. Dimension sandstone (bluestone) mostly for rough construction and rubble was quarried, chiefly in the Avondale vicinity. Production of basalt was down slightly, due to a labor dispute early in the year. Basalt was quarried and crushed for roadstone by V.

DiFrancesco & Sons, Devault, and Keystone Trappe Rock Co., Cornog. The latter company also produced railroad ballast. French Creek Granite Co., quarried dimension basalt near Saint Peters. Output was mostly rough and dressed stone for architectural use. Warner Co. produced quicklime and hydrated lime at its Cedar Hollow plant near Devault. Most of the output was used in construction and for sewage treatment. McAvoy Vitrified Brick Co. mined undifferentiated clay and shale at Phoenixville for use in manufacturing building brick.

Clarion.—Coal production was 15 percent less than that of 1966, but the county retained its second ranking in strip mining among the coal-producing areas. Production was almost entirely from 60 strip mines; only 1 underground mine was active. Equipment in use at strip mines included 42 power shovels and 33 draglines. Twenty-one of the draglines had dipper capacities of 6 to 12 cubic yards; one had a dipper capacity exceeding 12 cubic yards. Leading strip mine operators were Allison Engineering Co. (4 mines), C. & K. Coal Co. (14 mines), and G. A. Stiles Co. Allison Engineering Co. operated the county's only underground mine. Seventy-two percent of the county output was prepared at 6 cleaning plants.

Limestone for use as concrete aggregate, roadstone, and agstone was produced by Allegheny Mineral Corp., at a quarry and plant east of Parker. Emlenton Limestone Co., Inc., Turkey City, produced limestone for highway construction. Sand and gravel was processed near Parker for building, paving, fill, and antiskid purposes by Glacial Sand & Gravel Co. Plastic and flint fire clay was mined underground by Climax Division, A. P. Green Refractories Co. for its own use in firebrick and block. Frank B. Pope, New Bethlehem, produced plastic fire clay for refractory mortar. Fire clay and shale was produced by New Bethlehem Tile Co., New Bethlehem, for the manufacture of building brick and other heavy clay products. Plastic fire clay was produced from several strip pits near Corsica by W. P. Stahlman Coal Co., Inc., for the manufacture of clay crucibles.

Clearfield.—The county ranked fifth in total coal production and first in strip and second in auger mining. There were 91 mines in operation of which 57 were strip, 25 were underground and 9 auger. Strip production of 5.1 million tons comprised 74 percent of the total output. At the strip mines, 124 power shovels and 71 draglines removed overburden or loaded coal. Five of the draglines had dipper capacities exceeding 12 cubic yards. Most of the strip-mined output was from the Kittanning and Freeport seams. Eighteen of the strip mines produced more than 100,000 tons. Benjamin Coal Co. was the leading strip and auger mining company. Twenty-three percent of the county output was from underground mines. Leading producers were Lady Jane Collieries, Inc., and Associated Drilling, Inc. Nineteen continuous mining machines were in operation at underground mines.

The county continued as the leading clay producing area in the State in terms of both tonnage and value. There were 23 mines in operation producing 405,880 short tons valued at $3.8 million. Harbison-Walker Refractories Co. with nine operations was the leading producer. Most of the output was fire clay, mined by or for the major refractory-producing companies. Other companies of importance were Falls Creek Refractories Co., Blair Clay Products, Inc., and Clearfield Clay Products Co., all near Curwensville; Lansberry Coal & Excavating Co., Woodland; Hiram Swank's Sons, Inc., Boardman; and Williamsgrove Clay Products Co., Inc., Bigler.

Clinton.—Output of bituminous coal increased 36 percent above that of 1966. The entire output was from 12 strip mines. Principal producers were Garden Coal Co., Inc. (2 mines), Kettle Creek Corp. (4 mines), and Richmont Coal Co. (3 mines). Fourteen power shovels and 6 draglines were used to remove over-

burden or recover the coal. Lycoming Silica Sand Co., Salona, crushed and sized limestone for use as concrete aggregate and roadstone, and railroad ballast. Shale was mined under contract for Mill Hall Clay Products, Inc., near Castanea for manufacturing heavy clay products. Fink & Stackhouse mined flint clay near Farrandsville for use in manufacturing refractory products. Flint clay produced by R. C. Gillen & Son, Lock Haven, and Peter M. Evock, Renovo, was used in the manufacture of high aluminia brick.

Columbia.—Production of anthracite increased slightly above that of 1966 and totaled 418,000 tons. Two-thirds of the output was shipped by rail and the remainder by truck. Leading producers were Lehigh Valley Anthracite, Inc., and Sanchez Construction Co. Output of sand and gravel was slightly higher than the previous year. Building sand and gravel was processed by Bloomsburg Sand & Gravel Co., Inc., a stationary plant near Bloomsburg. Baker Stone Co., produced crushed limestone near Bloomsburg for the manufacture of quicklime and a small amount of hydrated lime for agricultural purposes. The moss and humus peat bog of Benton Peat, Inc., near Benton was idle during the year.

Crawford.—Sand and gravel production, which totaled 261,000 tons, was 9 percent less than that of the previous year. Producers were Conneaut Lake Sand & Gravel, Inc., Conneaut Lake, W. L. Dunn, Cochranton, and Hasbrouck Sand & Gravel, Titusville.

Cumberland.—Limestone production was slightly higher than the previous year and was used chiefly for concrete aggregate and roadstone. Production was reported for six quarries. Pennsy Supply, Inc., purchased the Bonny Brook Quarries near Carlisle and, in addition, operated two other quarries, one near Bowmansdale, the other near Silver Springs. Other producers were Hempt Bros., Inc., Camp Hill, Valley Quarries, Inc., Shippensburg, and Locust Point Quarries, Inc., Mechanicsburg. Sand and gravel production used chiefly for building and paving aggregate continued upward for the third consecutive year. Hempt Bros., Inc., operating a plant near Mt. Holly Springs, continued as the principal producer. Two other companies reported production of sand and gravel, one near Mt. Holly Springs, and one near Walnut Bottom. The Philadelphia Clay Co. mined kaolin near Mt. Holly Springs for sale to manufacturers of white cement. Penn Products Corp. used clay mined from their Black Clay mine near Boiling Springs to manufacture ceramic floor tile and art pottery.

Dauphin.—Crushed sandstone was quarried near Elizabethville by Faylor Lime & Stone Co., for aggregate and roadstone. Crushed limestone for open-hearth furnace flux, concrete aggregate and roadstone was produced by Bethlehem Mines Corp. (formerly H. Millard Lime & Stone Co.), Palmyra. The company discontinued lime production at the Swatara plant. The plant equipment was dismantled and the property sold. Crushed limestone for concrete aggregate and roadstone was also produced by Hempt Bros., Inc., Steelton, and George E. Ebersole & Sons, Hummelstown. Glen-Gery Shale Brick Corp. mined captive shale at open cuts near Middletown and Harrisburg for building brick manufacture. Sand and gravel for use as building and paving aggregate was processed by Pennsy Supply, Inc., at its Amity Hill plant located near Duncannon. Anthracite production totaled 155,000 tons, 30 percent below that of 1966. Most of the output was shipped to consumers by truck.

Delaware.—The county was the leading basalt-producing area in the State. The General Crushed Stone Co., Glen Mills and V. Di Francesco & Sons, Havertown, quarried basalt for concrete aggregate and roadstone. Media Quarry Co., quarried dimension sandstone near Media for rough construction and architectural use and for rubble. Dimension

granite was produced at two locations near Marple, mica schist for rough building stone by DiBonaventura Quarries, Inc., Springfield, and F. Cantono & Sons, Broomall. Sinclair Refining Co. and Sun Oil Co. recovered sulfur in the liquid purification of oil refinery gas at Marcus Hook. Expanded perlite was produced at the Primos plant of Insul-Fil Manufacturing Co. from crude material shipped from out of State. Output was used chiefly as concrete and plaster aggregate.

Elk.—Production of bituminous coal declined 32 percent to 320,000 tons. The decline was attributed to sharply reduced underground- and strip-mined tonnage. Auger production increased slightly. Most of the production was from 9 strip mines. P. & N. Coal Co., Inc. with 3 mines was the leading strip mine producer. At underground mines, Owens Coal Mining Co. was the principal producer. County output was mostly from the Lower and Middle Kittanning seams. Clark Construction Co., Johnsonburg, produced crushed sandstone for construction aggregate.

Erie.—The county was second ranked in sand and gravel production in the State. Erie Sand Steamship Co. continued as the principal producer recovering sand by dredging. Nickel Plate Sand & Gravel Co. produced a wide variety of sand and gravel products at its plant located near Fairview. Six companies were active in 1967. Corry Peat Products Co. produced reed-sedge and humus peat near Corry for general soil improvement.

Fayette.—Bituminous coal production was 39 percent below that of 1966. The decline was attributed to sharply reduced output from underground mines. Of the total output, 55 percent was from strip operations and the remainder from underground mines. Underground production was mainly from the Pittsburgh seam and strip output was chiefly from the Redstone and Sewickley seams. National Mines Corp. was a leading underground producer. Principal strip mine operators were Menallen Coke Co. and Soberdash Coal & Coke Co. (3 mines). Preparation plants were operated by Jones & Laughlin Steel Corp., National Mines Corp., and Ruane Coal Co. Jones & Laughlin Steel Corp. processed coal mined chiefly in Greene and Washington Counties.

Appalachian Stone Division, Martin Marietta Corp., produced crushed, ground, and sized limestone from its Lake Lynn quarry and crushed stone for concrete and roadstone at its Cool Spring quarry near Uniontown. Connellsville Bluestone Co. produced crushed stone (bluestone) near Connellsville for sale as construction aggregate. General Refractories Co. produced (ganister) from quartzite quarried near Layton. Fire clay output was reported by Kaiser Refractories, Division of Kaiser Aluminum & Chemical Corp. and Harbison-Walker Refractories Co. for their open cut mining operations, near Ohiopyle. Robert N. Matthews mined fire clay near Uniontown for sale to refractory manufacturers. Shale produced by Layton Fire Clay Co. from a deposit near Layton was used to manufacture building brick.

Forest.—Mineral activity was confined to the production of sand and gravel. Material recovered by Tionesta Sand & Gravel, Inc., was processed at its plant near Tionesta for use as building and paving aggregate.

Franklin.—Crushed limestone production was below that of 1966 because of reduced consumption of road building aggregate. Valley Quarries, Inc., Chambersburg, was the leading producer. Other producers were Appalachian Stone Division, Martin Marietta Corp., Zullinger and Williamson, and New Enterprise Stone & Lime Co., Dry Run. Building sand was produced by Mt. Cydonia Sand Co., Inc., and by Caledonia Sand Co., both at Fayetteville.

Fulton.—H. B. Mellott Estate, Inc., produced limestone at its Charlton quarry near Warfordsburg. The Morton quarry located near Big Cove Tannery, was inactive the entire year. The stone was used as concrete aggregate and roadstone. H. B. Mellott Estate, Inc., also processed sand at its plant near Warfordsburg.

Greene.—The county with 11.9 million tons of output continued to rank second among the 25 bituminous coal-producing counties in the State. Virtually the entire output was from 19 underground mines operating chiefly in the Pittsburgh and Sewickley coal seams. Only 3 strip mines were active. Underground production was loaded chiefly by 91 continuous mining machines. Three preparation plants were active but a portion of the county output was processed in Fayette County. Leading producers (all underground mines) were United States Steel Corp. (3 mines), Gateway Coal Co., Jones & Laughlin Steel Corp., Duquesne Light Co. (3 mines), and Buckeye Coal Co. E. J. Halow, Hollidaysburg, produced a limited quantity of undifferentiated clay.

Huntingdon.—The county continued as a principal source of industrial sand in the State. Pennsylvania Glass Sand Corp. produced a wide range of industrial and ground sand at its Keystone Works near Mapleton Depot. The sand was sold chiefly to the glass industry and smaller quantities were marketed for pottery, foundry, molding, and engine sand uses. The high value of the company product ranked the county second in value of production, even though it ranked seventh in tonnage. Crushed limestone was produced at virtually the same rate as that of 1966. Warner Co. quarried and crushed limestone at its Union Furnace facility near Tyrone. New Enterprise Stone & Lime Co. had operations at McConnellstown and Orbisonia. Output was mostly for concrete aggregate and roadstone. Harbison-Walker Refractories Co., and North American Refractories Co. produced refractory stone from quartzite quarried near Mt. Union and Three Springs, respectively. Alexandria Fire Clay Co. mined fire clay near Alexandria for sale to mortar manufacturers. Bituminous coal production decreased by 8,000 tons to 44,000 tons. Output was chiefly from 2 strip mines; Adam J. & Ruth Black Coal Co. was the principal producer.

Indiana.—The county ranked fourth in output of bituminous coal as production increased slightly above that of the previous year. Of the 7.7 million tons produced, 91 percent was recovered from 45 underground mines and the remainder from 30 strip and 7 auger mines. All but 36,000 tons of the underground production was mechanically loaded; 82 continuous mining machines and 1 longwall mining machine were in operation. Forty-seven percent of the total output was cleaned at 11 preparation plants. Leading underground mining companies were Barnes & Tucker Co. and Imperial Coal Corp. (5 mines). The largest strip mining companies were Mears Coal Co. (3 mines), Shick Coal Co., and Marion Center Mining Co. Roy E. Foehrenbach mined fire clay near Clymer for sale to refractory manufacturers.

Jefferson.—Output of bituminous coal was 6 percent greater than that of 1966. Of the 1.8 million tons produced, 55 percent was from strip mines, 39 percent from underground mines, and the remainder from auger mines. At strip mines, 45 power shovels and 16 draglines were used by producers for removing overburden or mining coal. Operators of underground mines used 11 continuous mining machines and other mechanical loading machines. Leading producers at strip mines were Minns Coal Co. and W. R. Stahlman Coal Co. (3 mines). Principal underground producers were Doverspike Bros. Coal Co., United Industries, Inc., and Markle Bullers Coal Co., Inc. Jay's Auger Mining Co. was the leading producer at auger mines. Clay output was nearly one-third less than that of the previous year. The leading producer was Hanley Co., Summerville. Fire Clay was used to produce firebrick, vitrified sewer pipe, and building brick. The Brockway Clay Co. recovered clay from their open pit near Brockway. The company's underground mine which was productive in previous years was closed permanently. Crushed limestone, chiefly for agricultural purposes, was produced by Sugar Hill Limestone Co., Brockway. Bank-run sand was produced near Brockway.

Lackawanna.—Anthracite production totaled 453,00 tons compared with 586,-000 tons in 1966. Shipments were mainly by truck. Carbondale Coal Co., Inc., and Popple Coal Sales Co. were among the larger anthracite producers. Sand and gravel processed by Contractors Sand & Gravel, Inc., near Moscow, was prepared for use as building and paving aggregate. The Dalton peat bog of Lake Linda Peat Co., Inc., was idle but shipments of moss peat were made from stockpiled material.

Lancaster.—The county ranked fourth in limestone production with output mostly for concrete aggregate and roadstone. Significant tonnage of agstone also was produced. Sixteen quarries were active in 1967; 12 produced more than 100,000 tons. The leading producers were D. M. Stoltzfus & Son, Inc., with quarries at Talmage, Quarryville, and Cedar Hill, Ivan M. Martin, Inc., Blue Ball, Binkley & Ober, Inc., East Petersburg, Compass Quarries, Inc., Gap, A. G. Kurtz & Son, Inc., Denver, and Belmont Limestone Co., Paradise. Total output was slightly less than in 1966. The J. E. Baker Co. sold its Billmeyer quarry located near Bainbridge to W. S. Fry Co., Inc., in December.

Building brick was produced by Glen-Gery Shale Brick Corp. from shale mined near Ephrata. Narvon Mines, Ltd. operated at open cut mine near Narvon producing plastic fire clay for sale for a variety of special uses. Lancaster Brick Co. purchased quantities of miscellaneous clay in addition to the quantity mined by them near Lancaster for use in manufacturing building brick. Sand recovered from three deposits was processed chiefly for use as building and paving aggregate. Some furnace sand also was produced. Milton Grove Sand, Inc., Milton Grove, was the largest producer. Anthracite production was slightly above that of 1966. Production was mainly from dredging in the Susquehanna River.

Lawrence.—Bessemer Cement Co., Division of Diamond Shamrock Corp. (formerly Diamond Alkali Co.) and Medusa Portland Cement Co. produced portland and masonry cement at plants at Bessemer and Wampum, respectively. Air-entrained cement for general use was the principal type of portland cement produced. Most of the shipments were in bulk by truck chiefly to ready-mixed concrete companies. The leading consumers were located in Eastern Ohio and Western Pennsylvania. Both companies quarried the shale and stone raw material. Production of limestone declined for the second consecutive year. United States Steel Corp. was the largest producer, reporting output of crushed stone for blast-furnace flux and cement manufacture. Depletion of quality stone for use in cement manufacture forced Bessemer Cement Co. to halt operations at their No. 7 quarry located near Bessemer. Crushed limestone also was produced by New Castle Lime and Stone Co. in Mahoning Township for concrete aggregate, roadstone, agstone, coal mine dusting, and for filler.

The county dropped to second place in clay production with output of 401,-000 tons. Production declined for the second consecutive year. Ralph A. Veon, Inc., Enon Valley, produced the largest quantity of clay, with output of plastic fire clay for sale to building brick and vitrified sewer pipe manufacturers and to foundries. The Negley Fire Clay Co. mined plastic fire clay for building brick near New Galilee. Shale was mined by Fenati Brick Co., Inc., New Castle, for the manufacture of building brick. Plastic fire clay and shale produced by McQuiston Coal Co., Bessemer, was sold to building brick manufacturers. Output of sand and gravel continued to decline for the second consecutive year and was 24 percent below the record high established in 1965. Sand and gravel produced by Mahoning Valley Sand Co., West Pittsburgh, and Superior Sand & Supply Co., New Castle, was processed for building, paving, and fill uses.

Reed-sedge peat was recovered near Leesburg by D. M. Boyd Co. for use as general soil improvement. The company completed recovery operations at this bog and planned to start new operations in Mercer County. Humus peat

was recovered by Welker Greenhouses, Inc., near Leesburg. Output was used for soil improvement, packing flowers, plants, shrubs, and as potting soils and as a mixed fertilizer. Bituminous coal production dropped 19 percent compared with that of 1966. All of the output was from 19 strip mines recovering coal mainly from the Lower and Middle Kittanning seams. Ambrosia Coal & Construction Co. (5 mines), Ralph A. Veon, Inc. (4 mines), and Kerry Coal Co. were the leading producers. Exfoliated vermiculite used chiefly as loose fill insulation and soil conditioning was produced at the Ellwood City plant of Zonolite Division, W. R. Grace & Co.

Lebanon.—Bethlehem Mines Corp. mined magnetite iron ore at Cornwall and processed the crude ore at its Cornwall concentrator. The material was processed by crushing, grinding, magnetic separation, and agglomeration. Valuable byproducts recovered by flotation were gold and silver, copper, pyrites, and cobalt. The company acquired and operated the Annville plant of H. E. Millard Lime & Stone Co. for the production of quicklime and hydrated lime. Most of the output was used for manufacturing steel but quantities also were sold for water purification, mason's lime and agriculture. The company also produced limestone for cement manufacture, concrete and roadstone, and agricultural stone. Production of crushed limestone was below that of the previous year. Most of the decline was attributed to lower demands of blast- and open-hearth furnace flux and construction aggregate. Calcite Quarry Corp. produced crushed limestone near Lebanon chiefly for concrete aggregate, roadstone, metallurgical flux and cement manufacture. Fiala, Inc., Annville, produced crushed limestone for cement manufacture and metallurgical flux. Pennsylvania Aggregates, Inc., Cornwall, crushed limestone for concrete aggregate and roadstone. Sheridan Slag Co., Lebanon, was inactive the entire year. Anthracite production was substantially below that of 1966 and totaled 3,000 tons. Paul Kerrigan Coal Co., Inc., was the only producer.

Lehigh.—Four cement companies were in operation and all had shipments of portland cement exceeding 1 million barrels. Producers were The Whitehall Cement Manufacturing Co., Cementon, Giant Portland Cement Co., Egypt, Lehigh Portland Cement Co., Fogelsville, and Coplay Cement Manufacturing Co., Coplay. Shipments were largely in bulk by truck to ready-mixed concrete companies and concrete product manufacturers. The major portion of shipments was of the general use, non-air-entrained type to consumers in New Jersey, Eastern Pennsylvania, and New York. All of the companies produced captive cement rock at nearby quarries. Concrete aggregate and roadstone were the chief markets for limestone produced by Eastern Industries, Inc., Stiles, Lehigh Stone Co., Ormrod, and Roy J. Kern, Guthsville. Dimension slate was quarried near Slatedale by Penn Big Bed Slate Co., Inc., for a wide variety of uses. Products included structural and sanitary slate, blackboard, flagging, aquarium bottoms, and roofing slate. Sphalerite (zinc sulfide) mined and concentrated at the Friedensville mine was shipped to a smelter at Palmerton for recovery of zinc metal. Waste limestone from the mine was sold as agstone and filler. Pennsylvania Perlite Corp. produced expanded perlite at Allentown for use in lightweight plaster and concrete aggregate, insulation, soil conditioning, and in cryogenic applications.

Luzerne.—The county continued as the leading area for anthracite production with output of 4.3 million tons, 363,000 tons below that of 1966. Of the total output, 58 percent was shipped to consumers by truck and the remainder was shipped by rail or used as colliery fuel. Leading producers were Blue Coal Corp., Glen-Nan Coal Co., Inc., Jeddo-Highland Coal Co., Lehigh Valley Anthracite, Inc., and George Racho. Sandstone for concrete aggregate and roadstone was produced by No. 1 Contracting Corp. of Delaware, Honey Hole, American Asphalt Paving Co., Shavertown, Coolbaugh Sand & Stone, Inc., Dupont, and The General Crushed Stone Co., White

Haven. Output of sand and gravel which totaled 652,000 short tons was 34 percent below the all time high established in 1965. Completion of Interstate Routes 80 and 81 projects in the area were the primary reasons for the decline. Production was reported from eight companies; leading producers were Airport Sand & Gravel Co., Inc., Wyoming, Frank B. Sgarlat Sand & Gravel Co., Forty Fort, and J. A. & W. A. Hess, Inc., Nescopeck. Peat was produced by Stillers Blue Ridge Peat Co., Dennison, and Pennsylvania Peat Moss, Inc., White Haven. The White Haven bog of Blue Ridge Soil Pep Co. was abandoned. Hazleton Brick Co. mined miscellaneous clay at various locations near Hazleton. Bylite Corp. reclaimed shale from a coal refuse bank for lightweight aggregate production.

Lycoming.—Lycoming Silica Sand Co., operator of limestone quarries near Jersey Shore and Muncy, sold their product chiefly for road construction. Some of the crushed limestone produced at Jersey Shore was marketed for agricultural purposes. The company also produced building and paving sand and gravel and industrial sand at a plant near Montoursville. Keystone Filler & Manufacturing Co. and Penn Paint & Filler Co. mined tripoli (rottenstone) near Muncy and Antes Fort, respectively, for sale as a filler and abrasive material. The former company also produced crushed slate flour near Muncy. Dimension sandstone for rubble was produced near Slate Run by Rummings Bluestone Co. Compared with 1966, bituminous coal production was slightly above that of the previous year. Production was limited to 5 strip mine operations. Producers were Fisher Mining Co. (3 mines), Paul Percival, and Jones Coal Co.

McKean.—Shale, chiefly for building brick, was produced at an open cut mine near Lewis Run by Hanley Co. Kane Stone Co. crushed sandstone for use as roadstone. C. L. McGavern, Jr. produced bank-run furnace sand from a pit near Eldred. No bituminous coal production was reported in the country as in previous years.

Mercer.—Bituminous coal production was below that of 1966. Output was limited to 6 stripping operations mining the Brookville seam. Buckeye Coal Co. was the largest producer. Production from four sand and gravel operations totaled 523,000 tons, an increase of 13 percent over the previous year. Producers were Seidle Sand & Gravel, Inc., Mercer, Atlas Sand & Gravel, Inc., Hadley, Taylor Sand & Gravel Co., Big Bend, and Hazen Construction, Clark Mills. Sandstone for a variety of uses was produced by White Rock Silica Sand Co. at its Greenville quarry.

Mifflin.—Pennsylvania Glass Sand Corp. produced industrial sands at its Hatfield works near McVeytown. Grinding and polishing, glass, and engine sands were the principal products. Two other operations, producing sand for local construction work, also were active. Crushed limestone, chiefly for use as blast-furnace flux, concrete aggregate, roadstone, and stone sand was produced by Bethlehem Mines Corp. at its Naginey quarry. Stone was recovered by recrushing stockpiled material, screening, and washing of waste dump material. Derry Limestone Co., Lewistown, and Faylor Lime & Stone Co., McVeystown, produced crushed limestone for concrete aggregate and roadstone. Honey Creek Lime Co. produced crushed limestone for the manufacture of mason's lime near Reedsville. Haws Refractories Co. produced crushed quartzite for the manufacture of silica brick.

Monroe.—Crushed and broken limestone used as concrete aggregate, roadstone, for manufacturing cement was produced by Hamilton Stone Co., Inc., Bossardsville. Building sand and gravel, mainly for use in ready-mix concrete, was produced by Sheesley Minerals, Inc., Kunkletown; and Lee & Hallett, East Stroudsburg. White clay was produced for cement manufacture at Kunkletown by Universal Atlas Cement

Division, United States Steel Corp., World Wide Peat Co., Blakeslee, Pocono Peat Co., East Stroudsburg, were inactive during the year.

Montgomery.—Production of stone exceeded 5.3 million tons and the county ranked second as a stone-producing area. Limestone, the principal type of stone produced, increased 5 percent, miscellaneous stone, 29 percent, and basalt, 21 percent. The increase was due largely to greater demands for concrete aggregate and roadstone. Quarries were operated near Conshohocken by Glasgow Quarry, Inc., and near Norristown by Bradford Hills Quarries, Inc., to produce crushed and broken limestone for concrete aggregate and roadstone. Limestone quarried near West Conshohocken by Allentown Portland Cement Co. was used as a raw material in the manufacture of cement. Quarries operated near Plymouth Meeting by G. & W. H. Corson, Inc., and near King of Prussia by Bethlehem Mines Corp. produced crushed limestone mainly for flux in iron and steel plants, concrete aggregate, road material, lime manufacture, and in magnesium-metal plants. Bethlehem Mines Corp. discontinued quarrying operations at their depleted Bridgeport quarry. Firestone Products Co., Inc. quarried quartzite near Glenside for refractory uses (furnace linings), and rubble. Crushed basalt for concrete aggregate and roadstone was produced by Kibblehouse Quarries, Inc., Perkiomenville, and Pottstown Traprock Quarries, Inc., Sanatoga. Montgomery Stone Co., Inc. quarried basalt near Montgomeryville for rough and dressed dimension stone and crushed stone for concrete aggregate and roadstone near Harleysville by M. & M. Stone Co. and near Spring House and Norristown by Gill Quarries, Inc. Rough building stone was produced near Eaglesville by Burdo Brothers. Mignatti Construction Co., Inc., produced mostly crushed granite for construction aggregate and a small quantity of riprap near Bethayres. Marcolina Bros., Inc. produced dressed dimension granite for construction and architectural work, near Laverock.

G. & W. H. Corson, Inc. produced pozzolan portland and masonry cement at its Plymouth Meeting plant. Allentown Portland Cement Co., West Conshohocken, operated a grinding plant for production of portland and masonry cements. Clinker shipped from the company's Evansville plant was transferred for grinding and finishing. Output was shipped to consumers principally in Eastern Pennsylvania, New Jersey, and Maryland. Shale produced under contract for The Robinson Clay Product Co., near Pottstown, was used to manufacture vitrified sewer pipe. Output of miscellaneous clay and shale by The Keller Pottery Co. near North Wales and Philadelphia Brick Co. near Trappe was seriously affected by declining sales and decreased building activity. Hydrated mason's lime was the principal product of the G. & W. H. Corson, Inc., Plymouth lime plant at Plymouth Meeting. Refractory and Insulation Corp. produced expanded perlite at its Port Kennedy plant for refractory uses.

Montour.—Crushed limestone for roadstone and agricultural purposes was produced by the Lycoming Silica and Sand Co., Milton. Mausdale Quarry Co., Danville, also produced crushed limestone for concrete and roadstone.

Northampton.—The county remained as the leading area for cement production with 8 plants in operation, shipping 17.8 million barrels of portland cement. All but 2 of the companies also produced masonry cement. Nearly 900,000 barrels of masonry cement were shipped. Ready-mixed concrete companies and concrete product manufacturers consumed the greatest portion of cement shipments. The major marketing area for the county cement shipments was Eastern Pennsylvania, but most of the eastern States also received significant cement shipments. Producers were Dragon Cement Co., Division of Martin Marietta Corp., and Universal Atlas Cement Division, United States Steel Corp., both near Northampton, Hercules Cement Co., Division of American Cement Corp., Stockertown, Keystone Portland Cement Co.,

Bath, Lone Star Cement Corp., Nazareth Cement Co., Penn-Dixie Cement Corp., all near Nazareth, and National Portland Cement Co., Bethlehem.

Northampton county continued as the leading stone-producing area; output totaled 5.7 million tons, the same as the previous year. Cement manufacturing companies produced large quantities of captive limestone or cement rock in the Nazareth, Northampton, and Bath area. In addition to the cement companies, limestone quarries were operated by Bethlehem Mines Corp., Bethlehem, The Trumbower Co., Inc., Nazareth, and Meckley's Limestone Products, Inc., Herndon. The crushed stone was processed and sold for riprap, concrete aggregate, roadstone, railroad ballast, and for agricultural purposes. No. 1 Contracting Corp. of Delaware processed sandstone quarried near Bath through a portable plant for use in highway construction.

The county was the center of the State's slate industry with production valued in excess of $3.9 million. Ten slate quarries were in operation in 1967. Slate output was mainly for flagging, structural and sanitary uses, blackboards, and roofing. Eight of the slate producers had value of output exceeding $200,000. Leading dimension slate producers were Anthony Dally & Sons, Inc., Stephens-Jackson Co., D. Stoddard & Sons, Inc., Albion Vein Slate Co., Doney Slate Co., and Diamond Slate Co., all of Pen Argyl. Crushed slate was produced by two operators, one of which also produced dimension slate. Pennsylvania Lightweight Aggregate, Inc., Bangor, produced crushed slate mostly for lightweight aggregate and small quantities for roofing granules. A fire early in the year, which destroyed the slate mill, curtailed production at Stephens-Jackson Co. Output for sand and gravel producers totaled 511,000 tons, 2 percent below the previous high established in 1961. Companies active were Houdaille Construction Materials, Inc., Portland, Alpha Aggregates, Division Alpha Portland Cement Co., Martins Creek, Lehigh Valley Sand & Gravel Co., Inc., Easton, and Steckel Concrete Co., near Bangor.

Northumberland.—Anthracite production increased slightly to 1.5 million tons. Output was shipped mainly by truck. Leading producers were Kerris & Helfrick, Inc., and Reading Anthracite Co. Shale from stock was used by Watsontown Products Co. in Watsontown for linoleum filler. Watsontown Brick Co. and Glen-Gery Shale Brick Corp., both near Watsontown, produced shale for manufacture of building brick. Labor disputes at construction sites in the marketing area resulted in a 6 percent decrease in clay production. Meckley's Limestone Products, Herndon, produced crushed limestone for concrete aggregate, roadstone, and agricultural purposes. Clyde Starook, Northumberland, used limestone to produce limited quantities of agricultural lime.

Perry—Crushed limestone for concrete aggregate and roadstone was produced by Bradford Hills Quarries, Inc., at its Newport quarry.

Philadelphia.—The Liberty Corp. dredged sand and gravel from the Delaware River near Philadelphia. Production declined for the second consecutive year. United States Gypsum Co. produced calcined gypsum at its Philadelphia plant. The material was used for manufacturing a variety of building materials. Atlantic Richfield Co. recovered hydrogen sulfide (burnt for sulfuric acid manufacture) and molten sulfur at its Philadelphia refinery.

Potter.—Production of dimension sandstone used mostly for flagging was reported from quarries near Austin, Bark Shanty, Coudersport, Roulette, and Wharton. Penn Kress Flagstone Co., Inc. was the largest producer.

Schuylkill.—The county continued to rank second in anthracite production. Output was 4.2 million tons compared with 4.5 million in 1966. Of the total output, 61 percent was shipped by truck and the remainder shipped by rail or used as colliery fuel. Leading producers were Reading Anthracite Co., Greenwood Stripping Corp., Honeybrook Mines, Inc., and Lehigh Valley Anthra-

cite, Inc. Summit Quarries, Inc., produced construction quartzite aggregate near Summit Station and Harbison-Walker Refractories Co. quarried and crushed quartzite to manufacture silica brick near Andreas. Huss Contracting Co. operated a limestone quarry and plant near Andreas producing aggregate and roadstone. Sand for building, paving, and industrial sand for fire or furnace was produced by Refractory Sand Co., Inc., at a plant near Andreas. Auburn Brick Co. mined undifferentiated clay and shale near Auburn for building brick.

Snyder.—Crushed limestone was produced near Paxtonville by National Limestone Quarry, Inc. for concrete aggregate, roadstone, and agricultural purposes. Sand and gravel was processed near Selinsgrove by Central Builders Supply Co. for manufacturing concrete products and other building uses. Production of anthracite was slightly below that of 1966.

Somerset.—Output of bituminous coal decreased 2 percent to 4.1 million tons. Most of the production was from 60 strip mining operations, and the county ranked third for strip mine production. Stripping equipment included 71 power shovels and 47 draglines. Four of the draglines had dipper capacities exceeding 12 cubic yards. Coal seams stripped included all the Kittanning and Freeport beds. Underground mining was mostly in the Upper Kittanning seam. Of the underground output, 88 percent was mechanically loaded. Thirteen continuous miners were in use. Leading strip-mining companies were PBS Coals, Inc. (5 mines), M. F. Fetterolf Coal Co., Inc. (3 mines), Svonavec, Inc. (5 mines), and Sanner Bros. Coal Co. (3 mines). Leading underground mines were operated by Bird Coal Co., Solar Fuel Co. (2 mines), Robert H. Glessner (2 mines), and J. R. Sales, Inc. Over 2.3 million tons of coal was cleaned at 10 preparation plants.

Somerset Limestone Co., Inc., quarried and crushed limestone at its Bakersville quarry for road construction. Keystone Lime Co., Springs, produced crushed limestone for use as concrete aggregate, roadstone, flagstone, and riprap. Crushed sandstone for concrete and roadstone was produced by Detwilers Industries, Inc., Central City, and Clarence Rodamer, Springs. Clay production was nearly 30 percent below that of the previous year. C. Brant Mining Co., the principal producer, recovered plastic fire clay from a deposit near Somerset for use in the manufacture of high alumina brick. General Refractories Co. mined flint fire clay at two locations (Fort Hill and Rockwood) for its own use in manufacturing firebrick and block. Plastic fire clay was produced by Otto Brick & Tile Works, Inc., Springs, and Harbison-Walker Refractories Co., Somerset. Svonavec, Inc. sold flint fire clay recovered from an open pit near Shanksville. A small quantity of sand for general use was produced near Boswell.

Sullivan.—Anthracite production totaled 35,000 tons compared with 21,000 tons in 1966. All of the output was shipped by truck. Blis Coal Co. was the primary producer.

Susquehanna.—Eight sandstone quarries were in operation. Dimension stone mainly for flagging was produced at six quarries; the leading producer was Mitchell Stone Co., Inc., Springville. State Aggregates, Inc., Montrose, and Keelor Supply Co., Inc., Clifford, crushed sandstone for concrete aggregate and roadstone. Anthracite production was below that of 1966 and totaled less than 1,000 tons.

Tioga.—Bituminous coal production increased compared with that of 1966. Output was from 7 stripping operations in the Seymour and Bloss seams. Producers were Jones & Brague Mining Co. (5 mines), Liberty Valley Construction Co., and Rattler Mines, Inc. Jones & Brague Mining Co. operated a preparation plant at Morris Run. Fredric M. Gee Gavel Co. recovered gravel near Middlebury Center for use on State, township, and local construction projects.

Union.—Limestone, crushed chiefly for concrete aggregate and roadstone was quarried by Faylor Lime and Stone Co., Winfield, and John L. Iddings, Mifflinburg. The State Highway Department purchased some of the stone for road maintenance.

Venango.—Output of bituminous coal increased 5 percent and was from 13 strip mine operations. Production was from the Brookville, Kittanning, and Clarion seams. Testa Bros., Inc. was the principal producer. Industrial Silica Division, Pennsylvania Glass Sand Corp., produced molding and furnace sand at its Venango works near Utica. Three other operations were active producing building and paving aggregate; the largest producer was Oil City Sand & Gravel Co. operating a dredge near Oil City.

Warren.—Sand and gravel production increased 54 percent over 1966. Aggregate produced by Nelson & Ellberg, Warren Sand & Gravel Co., Inc., General Concrete Products Corp., all located near Warren, was used chiefly for Federal, State, and local government projects.

Washington.—The county continued as the State's leading area for bituminous coal production. Output increased 636,000 tons to 14.8 million tons. Of the total output, 97 percent came from 16 underground mines, the remainder was from 15 strip and 1 auger mines. In use at underground mines were 67 continuous mining machines. Virtually the entire underground production was loaded mechanically. Nearly 13 million tons of coal was cleaned at 6 preparation plants. All of the underground production and most of the strip mine output was from the Pittsburgh seam. Three strip mines recovered coal in the Redstone and 1 strip mine operated in the Waynesburg seam. Leading underground producers were Bethlehem Mines Corp. (3 mines), Jones & Laughlin Steel Corp. (2 mines), Mathies Coal Co., Pittsburgh Coal Co. (2 mines), Republic Steel Corp., and United States Steel Corp. (2 mines). At stripping operations, Pennweir Construction Co. with 2 mines was the leading producer. Crushed limestone for concrete aggregate and roadstone was produced by Washington Stone Co., Inc., at a plant near Washington. A small quantity of clay was produced by Donley Brick Co., Washington, for use in manufacture of building brick and other heavy clay products.

Wayne.—Keystone Pavement & Construction Co., Inc. produced paving sand and gravel near Lake Ariel. Dimension sandstone (bluestone) used chiefly for flagging, was reported by W. R. Strong & Son, Paul Tompkins Estate, and Sterling Quarries, Inc. Crushed sandstone for concrete aggregate and roadstone was produced by Wayne Crushed Stone, Inc., Lake Ariel. Wayne Peat Humus Co. produced reed-sedge and humus peat from a bog near Gouldsboro.

Westmoreland.—Production of bituminous coal declined 15 percent below that of 1966 to 3.3 million tons. Of the total output, 93 percent was from 16 underground mines. Most of the production came from the Pittsburgh and Upper Freeport coal seams. Eighty-one percent of the underground production was cleaned at 4 preparation plants. Nearly the entire output from underground mines was mechanically loaded; 21 continuous mining machines were in use. Leading underground mining companies were Republic Steel Corp., Pittsburgh Coal Co., Eastern Associated Coal Corp., and Allegheny-Pittsburgh Coal Co. The leading strip producer was L. W. Overly.

Production of stone more than doubled that of the previous year. The county ranked first in crushed sandstone production with output of almost 1 million tons. The leading producers were Latrobe Construction Co., Ligonier, Hall's Bluestone, Inc., Baggaley, and Eidemiller Enterprises, Inc., Lycippees. Dimension sandstone for flagging was quarried by Lynn & Hall Co., Belle Vernon. Crushed limestone chiefly for concrete aggregate and roadstone was

produced near Belle Vernon, East Huntingdon Township, and Derry. Penn Aggregates, Jeannette, discontinued sandstone operations in the fall of 1966 and moved their equipment to a limestone quarry near Herminie. Davison Sand & Gravel Co. operated a dredge on the Allegheny River and produced large quantities of sand and gravel for building and paving purposes. Aglime was produced by Agricultural Lime & Stone Co. at a plant near Derry.

Wyoming.—Output of sand and gravel, mostly for building and paving aggregate, increased substantially over the previous year. Production was centered near Falls and was produced by Wyoming Sand & Stone Co. and East Falls Sand & Gravel. J. G. Robinson, Inc., produced dimension sandstone (bluestone) near Fort Washington for use as flagging.

York.—Medusa Portland Cement Co. produced portland and masonry cements at its York plant. Portland cement output was mostly general use, non-air-entrained, and white type. Shipments of finished portland cement was mainly by rail and to consumers in Eastern Pennsylvania and Maryland. Leading customers were ready-mixed concrete companies and concrete product manufacturers. York county ranked fifth in stone production with output totaling 3.8 million tons. Limestone was reported produced at ten operations; 7 near York, 2 near Thomasville, and 1 near Wrightsville. In terms of value, the county ranked second in limestone production. National Gypsum Co. and White Pigment Corp., both near York, produced a wide variety of whiting material and contributed significantly to the high-county valuation. In terms of tonnage, Thomasville Stone & Lime Co. and York Building Products Co., Inc., both of Thomasville, were the leading producers. Output was chiefly metallurgical flux and aggregates. The J. E. Baker Co. produced dead-burned dolomite and stone for agricultural purposes at its York plant. The Ruberoid Division of Central Aniline & Film Corp. produced crushed slate for roofing granules and flour at a quarry and plant near Delta.

Glen-Gery Shale Brick Corp., York Colonial Division, operated an open cut shale mine near Dover producing shale for captive use in building brick manufacture. Medusa Portland Cement Co. mined miscellaneous clay near York for use as a raw material in its cement plant. Building and paving sand and gravel was processed by Pennsy Supply, Inc. at a plant near York Haven. General Mining Associates recovered crude flake mica near Glenville and air-separated it for sales to paint, roofing, rubber, grease, welding rods, insulation, and textile coating manufacturers. The mine and plant operated until June when it was sold to Micalith Mining Co., Inc. The present owner did not operate the plant pending installation of new equipment. Expanded perlite used mainly as lightweight aggregate in building plaster was produced at York by Pennsylvania Perlite Corp.